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Semi-Annual Status Report No. 23

Olin Chemical Superfund Site 51 Eames Street, Wilmington MA 6107180016

Prepared for:

Olin Corporation

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List of acronyms

| AMEC | AMEC Environment & | Infractructure Inc |
|--------|----------------------|----------------------|
| AIVIEC | AIVIEC ENVIRONMENT & | inirastructure, inc. |

BEHP Bis(2-ethylhexyl)phthalate
CSL Calcium Sulfate Landfill

DAPL Dense Aqueous Phase Liquid

DMF Dimethylformamide

2018

Figure 3-7

EE/CA Engineering Evaluation/Cost Analysis
EPH Extractable Petroleum Hydrocarbons

IRS Interim Response Steps

IRSWP Interim Response Steps Work Plan

ISCO In-situ Chemical Oxidation

LNAPL Light Non-aqueous Phase Liquid

MACTEC Engineering and Consulting, Inc.

Massachusetts Department of Environmental Protection

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MS/MSD Matrix Spike/Matrix Spike Duplicate
MSA Method of Standard Additions

μg/L Micrograms per Liter mg/L Milligrams per Liter

NDMA N-nitrosodimethylamine NDPhA N-nitrosodiphenylamine NDPrA N-nitroso di-n-propylamine

Olin Corporation

off-PWD off-Property West Ditch

OU Operable Unit

QA/QC Quality Assurance/Quality Control

RAE Remedial Alternatives Evaluation
RGP Remediation General Permit

Plantage Remedial Investigation

RI Remedial Investigation

RI/FS Remedial Investigation/Feasibility Study

RPD Relative Percent Difference

SASR Semi-Annual Status Report

Site Olin Chemical Superfund Site

SVOC Semi-Volatile Organic Compound

TAL TestAmerica Laboratories, Inc.

TDS Total Dissolved Solids
TOC Total Organic Carbon
TSS Total Suspended Solids

USEPA United States Environmental Protection Agency

VOC Volatile Organic Compound VPH Volatile Petroleum Hydrocarbon

Wood Wood Environment & Infrastructure Solutions, Inc.

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1.0 INTRODUCTION

This Semi-Annual Status Report (SASR) has been prepared for the Olin Chemical Superfund Site (the Site) in Wilmington, Massachusetts, on behalf of Olin Corporation (Olin) by Wood Environment & Infrastructure Solutions, Inc. (Wood, formerly Amec Foster Wheeler). The SASR has been prepared consistent with Section 2.II.C. of the Statement of Work, Remedial Investigation/Feasibility Study (RI/FS), Olin Chemical Superfund Site, prepared by the United States Environmental Protection Agency (USEPA) Region I – New England and dated June 2007 (USEPA, 2007). This SASR summarizes the monitoring activities conducted from April 2018 through September 2018 and presents monitoring data and analytical results including, but not limited to, groundwater and surface water data from the Slurry Wall/Cap and Plant B monitoring programs for the second and third quarter of 2018.

The Site location is presented in **Figure 1-1**. **Figure 1-2** is a Site plan that identifies the three areas that are described in the Interim Response Steps Work Plan (IRSWP) including Slurry Wall/Cap Containment Area, Plant B, and the off-Property West Ditch (OPWD) area. This SASR discusses field and report-related activities for those three areas which are ongoing Interim Response Steps (IRS) as described in the IRSWP and the DAPL Extraction Study status.

The three specific IRSs include:

- Slurry Wall/Cap monitoring of groundwater, surface water, and sediment in the area surrounding the Slurry Wall and inspection of the temporary cap;
- Plant B operation, maintenance, and monitoring of the groundwater recovery/treatment system that was designed to remove and control migration of light non-aqueous phase liquid (LNAPL); and
- Dense Aqueous Phase Liquid (DAPL) Extraction Design, installation and operation of a pilot study to evaluate the efficacy of DAPL extraction in the OPWD Area.

This SASR is organized as follows:

Section 1.0 - Introduction

Section 2.0 – Slurry Wall/Cap

Section 3.0 – Plant B

Section 4.0 – DAPL Extraction

Section 5.0 – Additional Activities

Section 6.0 – References

Appendix A – Interim Response Steps Field Activity Reports

- A-1 Second Quarter 2018 Sampling Event
- A-2 Third Quarter 2018 Sampling Event

Appendix B – Data Validation Memoranda (*Provided on CD***)**

- B-1 Second and Third Quarter 2018 Sampling Events
- B-2 Additional Sampling Events

May 2018 Calcium Sulfate Landfill Sampling

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June 2018 Private Well Sampling

September 2018 Private Well Sampling

B-3 Unvalidated Data

April 2018 - September 2018 Plant B RGP and Tank Sampling

Appendix C – Weir Monthly Inspection Reports: April 2018 – September 2018 Appendix D – Slurry Wall/Cap Groundwater and Surface Water Time Series Plots

- D-1 Groundwater (Aluminum, Ammonia, Chloride, Chromium, Sulfate)
- D-2 Surface Water (Aluminum, Ammonia, Chloride, Chromium, Sulfate)

Appendix E – Slurry Wall/Cap Data Logger Water Level Plots

- E-1 Groundwater Elevation (Corrected for Barometric Pressure) and Precipitation Second Quarter 2018
- E-2 Groundwater Elevation (Corrected for Barometric Pressure) and Precipitation Third Quarter 2018

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2.0 SLURRY WALL/CAP

The following sections present results of chemical analyses for groundwater and surface water samples associated with the slurry wall/cap during the second and third quarter of 2018. Groundwater level data for the second and third quarter of 2018 are presented in the field activity reports contained in **Appendices A-1 and A-2**. The data validation memoranda for these sampling events are provided in **Appendices B-1 and B-2**, respectively. The results of these analyses are generally consistent with past results.

Olin personnel conducted weekly observations of the weir and South Ditch and recorded observations concerning wildlife, surface water conditions, and flocculent accumulation. These reports are reviewed by Wood and compiled in separate monthly reports, which are provided for the current reporting period in **Appendix C**.

2.1 Groundwater

Groundwater sampling and analysis for the second quarter of 2018 sampling event was completed from May 15 through 18, 2018. The third quarter of 2018 sampling event was completed from August 6 through 7, 2018.

The second quarter of 2018 sampling event included groundwater sample collection from 15 monitoring wells: GW-10S, GW-24, GW-25, GW-34SR, GW-34D, GW-35S, MP-2#13, GW-43SR, GW-76S, GW-78S, GW-79S, GW-201S, GW-202S, GW-202D, and GW-CA-1; and five piezometers: PZ-16RRR, PZ-17RRR, PZ-18R, PZ-24, and PZ-25 located along the South Ditch consistent with the Final IRSWP. The third quarter of 2018 sampling event included groundwater sample collection from five monitoring wells: GW-25, GW-78S, GW-79S, GW-202S, and GW-202D; and five piezometers: PZ-16RRR, PZ-17RRR, PZ-18R, PZ-24, and PZ-25.

Quality Assurance/Quality Control (QA/QC) samples include two field duplicates and matrix spike/matrix spike duplicates (MS/MSD).

The sample locations, details of sampling, and the analytical program are identified in the field activity reports. Field activity reports for the second and third quarter of 2018 sampling events are contained in **Appendices A-1 and A-2**, respectively. The field activity reports also contain tabulated final field parameter measurements collected at the time of sampling, sample collection field data records, and instrument calibration records. Groundwater samples were analyzed by TestAmerica Laboratories, Inc. (TAL) for ammonia, chloride, sulfate, specific conductance and filtered samples are analyzed for aluminum and chromium.

Table 2-1 and Table 2-2 summarize groundwater analytical results for samples collected during the second and third quarter of 2018 sampling events. The data validation memoranda for groundwater and surface water are included in **Appendices B-1 and B-2** and conclude that TAL results are useable as reported by the laboratory unless otherwise indicated in the validation report.

Appendix D-1 presents time series groundwater concentration plots for aluminum, ammonia, chloride, chromium, specific conductance, and sulfate from the south, southeast, west, and north areas surrounding the Containment Area. These plots include historic data along with data from the second and third quarter of 2018 sampling events. Groundwater analytical data for monitoring well GW-43SR (west of the Containment Area) was added to **Appendix D** when it was replaced in November 2010, and piezometers PZ-24 and PZ-25 were added in June of 2011 at the request of USEPA. Piezometer (PZ-24) and well (GW-35S) identified on these plots are interior to the Containment Area, while one well (GW-CA1) is located within the gravel equalization window of the Containment Area.

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The analytical results for dissolved metals (aluminum and chromium) in groundwater samples collected from south of the Containment Area (GW-78S, GW-202S, GW-202D, PZ-17RRR, PZ-18R, PZ-24, PZ-25), southeast of the Containment Area (GW-79S, GW-201S, PZ-16RRR), west of the Containment Area (GW-24, GW-25, GW-26, GW-42S (MP-2#13), GW-43SR, GW-76S), and north of the Containment Area (GW-10S, GW-34D, GW-34SR, GW-35S, GW-CA1) are consistent with historical data and the previous reporting period and are stable within historical ranges (**Appendix D-1, Figures D-1.1 through D-1.8**).

Concentrations of dissolved aluminum and chromium in GW-202D (filtered samples) have declined from the maximum concentrations detected in 2008 and 2009 and have continued to decline (Al) or remained stable (Cr) over the past several years.

The analytical results for ammonia in groundwater samples are consistent with historical data and are stable within historical ranges (**Figures D-1.9 through D-1.12**).

Concentrations of ammonia in groundwater samples from locations GW-202D, PZ-16RRR, GW-79S, and PZ-18R have declined from the maximum concentrations detected in 2008 and 2009 and have been comparatively stable for the last several years. Concentrations detected in PZ-18R continue to fluctuate over a wider range with the highest concentrations occurring in spring (March-May) and lowest levels occurring in the fall (November) **Figure D-1.9 and D-1.10**. PZ-18R ammonia concentrations are higher than those found in groundwater (GW-202D and GW-202S) or in downstream pore water underlying South Ditch (PZ-17RRR).

Concentrations of sulfate and specific conductivity are generally consistent with historical data and are stable within historical ranges (**Figures D-1.17 through D-1.24**). Specific conductivity and sulfate concentrations are consistent in PZ-18R and GW-202D and continue to show largest seasonal fluctuations and are similar to the results for ammonia.

Concentrations of chloride south of the Containment Area at GW-202S exhibits a small but gradual increase since 2012 (**Figure D-1.13**) reflecting upgradient sources described below.

Concentrations of chloride and specific conductivity located west and up gradient of the Containment Area have increased since 2010 at locations GW-24, GW-25, MP-2#13 (GW-42S), and GW-43SR (**Figure D-1.15** and D-1.23) and are interpreted to reflect industrial development activities and increased use of de-icing salts on adjacent properties since other sample parameter concentration (aluminum, ammonia, chromium, sulfate) have not increased over that same period. Chloride and specific conductivity concentrations detected at location GW-76S have decreased since highs in 2013 (**Figure D-1.15 and D-1.23**). The highest concentrations of chloride in PZ-18R are seasonal and occur in the spring (March-May) with the lowest levels occurring in the fall (November). Shallow groundwater on the south side of the Containment Area (GW-202S) has shown a similar pattern of increasing chloride concentrations during this same time frame.

Groundwater levels were measured from select groundwater monitoring wells and piezometers prior to each sampling event. Water level measurements are tabulated in **Appendices A-1 and A-2**. These measurements and the interpreted groundwater potentiometric surfaces are depicted on **Figures 2-1 and 2-2**. The water levels and interpreted groundwater potentiometric surface for the second and third quarter of 2018 are consistent with prior periods.

2.2 Surface Water

The second quarter of 2018 Surry Wall/Cap sampling event include the collection of surface water samples from seven locations ISCO-1, ISCO-2, ISCO-3, PZ-16RRR, PZ-17RRR, PZ-18R, and SD-17. Unfiltered samples were analyzed by TAL for aluminum, chromium, sodium, ammonia, chloride, nitrate, nitrite, sulfate, and specific conductance. In addition, filtered surface water samples were analyzed for metals: aluminum, chromium, and sodium. QA/QC samples include one field duplicate and one MS/MSD. The sample

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locations, details of sampling, and the analytical program are identified in the field activity report in **Appendix A-1**. During the third quarter 2018 sampling event, the South Ditch and East Ditch were observed to be dry and therefore no surface water samples were collected.

Table 2-3 summarizes surface water analytical results for samples collected during the second quarter 2018 sampling event. The surface water data validation memorandum is included in **Appendix B** and concludes that TAL's results are useable as reported by the laboratory unless otherwise indicated in the validation report.

Appendix D-2 presents time series surface water concentration plots for dissolved aluminum, dissolved chromium, ammonia, chloride, sulfate, and specific conductivity from the Upper South Ditch and Lower South Ditch areas. These plots include historic data along with data from the second quarter of 2018 sampling event.

Detected concentrations and temporal patterns of the metals and inorganic parameters are consistent and within historical ranges from samples collected in the Upper South Ditch and Lower South Ditch. Dissolved aluminum and dissolved chromium in surface water from the Upper South Ditch and Lower South Ditch have decreased and stabilized since 2008 at sample location PZ-16RRR and since 2013 at sample locations SD-17 and ISCO-2 (Figures D-2.1 through D-2.4). Ammonia, sulfate, and specific conductance concentrations in surface water samples have also decreased and stabilized since 2009 in the Upper South Ditch and Lower South Ditch and exhibit greater seasonality. (Figures D-2.5 through D-2.12). Concentrations in surface water above the weir (PZ-18RSW and ISCO-1) are lower and have remained more stable (lacking indications of seasonality) since the weir suppresses groundwater discharge upstream of the weir. Concentrations of chloride appear to have increased slightly since 2008 and 2009 in Upper South Ditch at locations ISCO-1 and PZ-18R and Lower South Ditch at location ISCO-3 consistent with trends in upgradient groundwater from increased use of de-icing road salt at commercial operations along adjacent properties and roadways (Figures D-2.7 and D-2.8).

2.3 Data Logger Data

Data loggers are deployed in 10 monitoring wells and piezometers: GW-10S, GW-35S, GW-CA1, GW-76S, GW-78S, GW-CA3S, GW-CA4S, GW-6S, PZ-24, and PZ-25, to continuously monitor groundwater elevation within and outside the Containment Area. **Appendix E** presents time series groundwater elevation plots (**Figure E-1 and Figure E-2**) compared to precipitation data measured at the Site. These plots include groundwater elevations from April 2018 through September 2018 and have been corrected for barometric pressure using Site specific barometric pressure data. The data acquisition rate remains one reading every hour.

Continuous water level data plots indicate groundwater within and outside of the Containment Area responds to recharge of the aquifer. There were not many recharge rain events in the second quarter and third quarter of 2018 which led to groundwater recession and elevation lows from April through July. Several significant rain events at the end of the third quarter 2018 led to seasonal water elevation highs in September 2018. Comparison of water levels in GW-35S and GW-CA1 indicates an outward flow gradient through the equalization window in April and May 2018; with an inward flow gradient from June through September 2018.

2.4 Temporary Cap Inspection

As detailed in SASR No. 18, the official temporary cap inspection frequency was reduced from quarterly to semi-annually. The semi-annual inspection for the second quarter of 2018 was conducted on April 20, 2018. The inspection field data record, which indicates observations, maintenance, and repairs completed on the

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temporary cap, is included in Appendix C of the second quarter of 2018 field activity report (FAR) attached in **Appendix A**.

As stated previous SASRs, Olin is self-performing official inspections and integrating the inspection and maintenance repair activities. Olin continues to perform additional random inspections to ensure that any potential maintenance needs are addressed in a timely fashion.

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3.0 PLANT B

The following sections present results of chemical analysis of groundwater for the second and third quarter of 2018 Plant B sampling events. Groundwater level data from these sampling events are presented in field activity reports contained in **Appendices A-1 and A-2**. The data validation memoranda for the second and third quarter of 2018 are provided in **Appendices B-1 and B-2**, respectively.

Olin personnel collected monthly water level, LNAPL thickness, LNAPL recovery data, and sampled the treatment plant influent and effluent in accordance with the Remediation General Permit (RGP) requirements. Samples are analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), total metals, hexavalent chromium, chloroform, total phenols, residual chlorine, total suspended solids (TSS), chloride, and pH. The analytical program for the RGP was described in the IRSWP (MACTEC, 2008) and is subject to revision under a new permit. The analytical data for the RGP are retained on-Property by Olin in accordance with that permit. Plant B sampling frequencies continue on a monthly basis. Treated groundwater is stored in the newly installed on-Site Plant B aboveground storage tanks (ASTs) and sampling is completed prior to discharge. A summary table of Plant B influent and treated water data is presented in **Table 3-1**. The monthly water level and LNAPL thickness data (April 2018 – September 2018) are summarized in **Tables 3-4 and 3-5** and **Figures 3-1 through 3-12**.

On June 29, 2018, Olin notified USEPA of a temporary shutdown of Plant B to allow Olin to discuss with USEPA's RGP permit writer changes in the new permit. On August 3, 2018, Olin notified USEPA of its intent to conduct additional monitoring in accordance with the appropriate portions of the USEPA-approved pumping rate reduction test outlined in the Interim Response Steps Work Plan (dated July 25, 2007 and approved August 6, 2008). As a result, monthly pumping and discharge was placed on hold during the SASR reporting period.

East Ditch observations are made from the embankment on a daily basis during normal working days by the Olin staff that operates Plant B. The Plant B Water Treatment Plant Daily Report contains a check box for observation of LNAPL related sheens in the East Ditch. This check box is used if a sheen is observed. The daily report is an internal Plant B record of operating parameters for the treatment plant. Sheens in the East Ditch were not observed during the April 2018 through September 2018 monitoring period.

3.1 Groundwater

The second and third quarter of 2018 sampling events included groundwater sample collection from monitoring well GW-16R. Groundwater samples were collected and analyzed for trimethylpentenes, n-nitrosodiphenylamine (NDPhA), bis(2-ethylhexyl)phthalate (BEHP), volatile petroleum hydrocarbons (VPH), ammonia, iron, and pH.

The second quarter of 2018 and third quarter of 2018 sample locations, details of sampling, and the analytical program are described in the field activity reports (**Appendices A-1 and A-2**, respectively). **Tables 3-2 and 3-3** present analytical results from the second quarter of 2018 and third quarter of 2018 groundwater sampling events, respectively. Data validation memoranda for these sampling events are included in **Appendix B** and indicate the analytical results are useable as reported by the laboratory unless otherwise indicated in the validation report.

The second and third quarter of 2018 analytical results for trimethylpentenes, NDPhA, BEHP, VPH, ammonia, iron, and pH in groundwater remain consistent with past results.

Olin personnel measure groundwater levels from 25 monitoring wells and three groundwater extraction wells (IW-11, IW-12, and IW-13) on a monthly frequency. If the water level probe suggests the presence of LNAPL, the thickness of the LNAPL is measured. The monthly water table elevation data are presented in

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Tables 3-4 and 3-5 and in **Figures 3-1 through 3-6** during the April 2018 through September 2018 reporting period.

3.2 Light Non-Aqueous Phase Liquid

The LNAPL layer in the vicinity of the Plant B treatment plant is extremely thin. A protocol for LNAPL thickness measurement and confirmation of LNAPL presence via visual observation was developed previously to address the interpretation of instrument response for what appears to be a very thin LNAPL layer at and below the meter sensitivity for detection (less than 0.01 feet). The LNAPL thickness measurement data for the reporting period are presented in **Figures 3-7 through 3-12**. LNAPL has been observed in both the observation wells and groundwater extractions wells. A layer of LNAPL has consistently been measured in wells: GW-23, IW-11, and P5 with thin layers of LNAPL observed in wells: 12-IN, PID, and IW-2.

The monthly LNAPL recovery data are presented in **Tables 3-4 and 3-5**. Over the reporting period, on average, approximately 0.28 gallons of LNAPL was recovered per month. The total LNAPL recovered for the April 2018 through September 2018 period was 1.68 gallons. Monthly and cumulative LNAPL recovery data are summarized in **Figure 3-13**. Groundwater levels relative to monthly LNAPL recovery are plotted and summarized in **Figure 3-14**.

The LNAPL recovery data indicate a stabilization of the LNAPL recovery rate since 2005 with all the recovered LNAPL coming from IW-11.

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4.0 DAPL EXTRACTION

This section reports progress on the DAPL Pilot Study and summarizes communication between Olin and USEPA for the reporting period (April 2018 through September 2018).

4.1 Operations Status

During the reporting period the extraction system operated at an extraction rate of approximately 0.25 gpm and was online from April 2018 through May 2018. The system went offline on May 31, 2018 due to DAPL solution dilution at the extraction point. After it was determined that DAPL levels had recovered, the extraction system was restarted, and operations resumed on October 25, 2018.

4.2 Reporting Status

Periodic data plots for pH, and specific conductance from multilevel wells (ML-1, ML-2, MP-2), the extraction well (EW-1) and induction logging results (ILW-1, and ILW-2) are sent directly to USEPA by Olin on an as needed basis.

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5.0 ADDITIONAL ACTIVITIES

During the reporting period for this SASR (second and third quarter 2018), Olin has completed or continued to progress on activities as described below. In addition, quarterly residential drinking water samples were collected from several residences in proximity of the Site.

Additional Remedial Investigation (RI) activities that were conducted are also described.

5.1 Major Submittals, Meetings and Other RI/FS Activities

The following submittals were made during the reporting period.

- A letter report titled "Results of Containment Area Bedrock Borings" was submitted to USEPA on May 10, 2018.
- SASR No. 22 was submitted to USEPA on June 26, 2018.
- On July 6, Olin submitted a Rock Matrix Sampling Work Plan for the Olin Chemical Superfund Site. This was a revision to an earlier draft submitted on April 26, 2018.
- A letter outlining Abandonment Steps/Procedures for Containment Area Borehole OC-BB-2-2018 was submitted to USEPA on August 23, 2018.
- Olin had correspondence with USEPA concerning Plant B RGP as discussed in Section 3.0.
- On September 25, 2018, Olin received USEPA comments on RI/FS submittals. Olin is currently responding to USEPA comments.

There were no additional major submittals specific to the OU3 RI/FS process during the reporting period.

5.2 Residential Drinking Water Sampling

The following paragraphs summarize water supply sampling activities at residential locations in accordance with methods in the approved RI/FS Work Plan, and as modified by the Summary Report for the 2010 Residential Drinking Water Program and the Phase I Private Well Sampling proposal.

Second quarter 2018 private well sampling was completed on June 12 and 13, 2018. Six residences: Map 2/Lot 7, Map 24/Lot 54, Map 24/Lot 63, Map 24/Lot 64, Map 24/Lot 94, and Map 27/Lot 14C were sampled and analyzed for the following parameters: SVOCs, N-nitrosodimethylamine (NDMA), N-nitrosodin-propylamine (NDPrA), metals, hexavalent chromium, anions (chloride, sulfate, nitrate, nitrite), and ammonia. Two residences: Map 24/Lot 66, and Map 24/Lot 72 were sampled and analyzed for: NDMA, NDPrA, metals, anions, and ammonia. One residence: Map 14/Lot 2B was sampled and analyzed for: NDMA, NDPrA, metals, hexavalent chromium, anions, and ammonia. Seven residences: Map 3/Lot 7, Map 1/Lot 6D, Map 1/Lot 6C, Map 3/Lot 2F, Map 3/Lot 2, Map 3/Lot 2D and Map 24/Lot 116 were sampled and analyzed for NDMA only.

Samples were not collected from location Map 15/Lot 2C because the owners were away on an extended vacation and location Map 24/Lot 65 because the water was shut down.

Third quarter 2018 private well sampling was completed on September 27-28, 2018 at the same residences and for the same analysis as listed during the June 2018 event (above); with the following exceptions: Samples were collected at location Map 15/Lot 2C for SVOCs, NDMA, NDPrA, metals, hexavalent chromium, anions, and ammonia. No samples were collected from location Map 3/Lot 2F because the well was shut down and location Map 24/Lot 116 because no access was provided.

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Data from the June and September 2018 residential drinking water sampling events are summarized in **Tables 5-1 and 5-2**, respectively. The validation memoranda for the private well sampling events are attached in **Appendix B**.

5.3 Plant B Pumping Rate Reduction Test

The proposed Pumping Rate Reduction test is still officially on hold; however, some related monitoring activities were conducted in conjunction with temporary suspension of Plant B operations as described in Section 3.0.

5.4 OU1 and OU2 Remedial Investigation Sampling and Analytical Results

No additional OU1 and OU2 sampling activities have been completed during this reporting period. The OU1/ OU2 Draft Final Remedial Investigation Report was submitted to EPA on July 24, 2015 and was approved by USEPA.

5.5 OU3 Remedial Investigation Groundwater Sampling and Analytical Results

Results from all OU3 groundwater instigation was summarized and provided to the USEPA as Draft OU3 Remedial Investigation Report dated March 30, 2018. Additional OU3 investigation activities were completed in March 2018. These activities included drilling two bedrock boreholes on the Olin property; one bedrock boring installed inside the cap and one bedrock boring installed outside the cap. The results of this investigation were summarized and provided to the USEPA under separate cover on May 10, 2018.

A full water level synoptic gauging event was completed in October 2018. Results from this event will be included in a revised RI report.

5.6 Calcium Sulfate Landfill

Groundwater sampling at the Calcium Sulfate Landfill (CSL) has been completed consistent with the Massachusetts Department of Environmental Protection (MassDEP) approved semi-annual monitoring schedule (May and November). Groundwater samples were collected from select monitoring wells identified in **Figure 5-1**. Samples were collected and submitted by Olin personnel for the following analysis: total dissolved solids (TDS), total metals (calcium, sodium, aluminum, manganese, iron, chromium, and nickel), chloride, sulfate, and alkalinity. The data validation memorandum for the CSL groundwater monitoring program is attached in **Appendix B**. The CSL data (2017-2018) will be summarized and submitted to MassDEP in the 2019 biennial report.

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6.0 REFERENCES

AMEC Environnent & Infrastructure, Inc. (AMEC), 2012. Operations, Maintenance & Performance Monitoring Plan, DAPL Extraction Pilot Test for the Olin Chemical Superfund Site in Wilmington, MA, October 8, 2012.

MACTEC Engineering and Consulting, Inc. (MACTEC), 2008. Final Interim Response Steps Work Plan, Olin Chemical Superfund Site, Wilmington, Massachusetts. August 8, 2008.

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wood.

Tables

Table 2-1

Slurry Wall/Cap Analytical Results for Second Quarter 2018 Groundwater Sampling Semi-Annual Status Report No. 23 Olin Chemical Superfund Site Wilmington, Massachusetts

| | OC-GW-10S | OC-GW-201S | OC-GW-202D | DUP GW 202D | OC-GW-202S | OC-GW-24 | OC-GW-25 | OC-GW-34D | DUP GW 34D | OC-GW-34SR | OC-GW-35S |
|------------------------------|-----------|------------|------------|-------------|------------|-----------|-----------|-----------|------------|------------|-----------|
| Parameter Name | 5/18/2018 | 5/18/2018 | 5/15/2018 | 5/15/2018 | 5/15/2018 | 5/18/2018 | 5/16/2018 | 5/17/2018 | 5/17/2018 | 5/17/2018 | 5/17/2018 |
| Metals, Filtered (mg/L) | | | | | | | | | | | |
| Aluminum | 3.6 | 0.1 J | 0.89 | 0.93 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Chromium | 0.0012 J | 0.051 | 0.22 | 0.22 | 0.0027 J | 0.005 U | 0.005 | 0.0099 | 0.011 | 0.0019 J | 0.011 |
| Inorganics (mg/L) | | | | | | | | | | | |
| Nitrogen, as Ammonia | 0.75 | 99 | 120 | 120 | 33 | 26 | 19 | 2.9 J | 2.0 J | 0.24 U | 15 |
| Chloride | 11 | 50 | 170 | 170 | 150 | 74 | 290 | 3.8 | 3.8 | 1.9 | 3.7 |
| Sulfate | 44 | 1200 | 930 | 1100 | 150 | 24 | 46 | 20 | 20 | 8.5 | 340 |
| Specific Conductance (mS/cm) | 130 | 2500 | 2600 | 2600 | 1000 | 480 | 1200 | 110 | 120 | 64 | 1100 |

Notes:

mg/L - milligrams per liter

mS/cm - milliSiemen per centimeter

U - analyte not detected,

value shown is detection limit

J - value is estimated

Table 2-1 Slurry Wall/Cap Analytical Results for Second Quarter 2018 Groundwater Sampling

Semi-Annual Status Report No. 23 Olin Chemical Superfund Site Wilmington, Massachusetts

| | OC-GW-42S (MP2 PORT 13) | OC-GW-43SR | OC-GW-76S | OC-GW-78S | OC-GW-79S | OC-GW-CA-1 | OC-PZ-16RRR | OC-PZ-17RRR | OC-GW-18R | OC-PZ-24 | OC-PZ-25 |
|------------------------------|----------------------------|------------|-----------|-----------|-----------|------------|-------------|-------------|-----------|-----------|-----------|
| Parameter Name | 5/18/2018 | 5/18/2018 | 5/18/2018 | 5/16/2018 | 5/16/2018 | 5/17/2018 | 5/16/2018 | 5/16/2018 | 5/16/2018 | 5/15/2018 | 5/15/2018 |
| Metals, Filtered (mg/L) | | | | | | | | | | | |
| Aluminum | 0.74 | 0.3 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Chromium | 0.022 | 0.0015 J | 0.0034 J | 0.0025 J | 0.0068 | 0.01 | 0.0065 | 0.0067 | 0.045 | 0.022 | 0.011 |
| Inorganics (mg/L) | | | | | | | | | | | |
| Nitrogen, as Ammonia | 39 | 0.97 | 7.9 | 30 | 46 | 0.81 | 83 | 36 | 190 | 34 | 34 |
| Chloride | 400 | 320 | 29 | 10 | 89 | 7.0 | 120 | 14 | 630 | 7.2 | 23 |
| Sulfate | 180 | 26 | 37 | 490 | 640 | 54 | 570 | 430 | 1700 | 840 | 550 |
| Specific Conductance (mS/cm) | 1600 | 1100 | 250 | 1500 | 1900 | 460 | 1700 | 1400 | 4900 | 1800 | 1500 |

Notes:

mg/L - milligrams per liter

mS/cm - milliSiemen per centimeter

U - analyte not detected,

value shown is detection limit

J - value is estimated

Prepared by: KMS 11/27/18 Checked by: CTM 11/30/18

Table 2-2

Slurry Wall/Cap Analytical Results for Third Quarter 2018 Groundwater Sampling Semi-Annual Status Report No. 23 Olin Chemical Superfund Site Wilmington, Massachusetts

| | OC-GW-202D 8/6/2018 | OC-GW-202S 8/6/2018 | OC-GW-25 8/7/2018 | OC-GW-78S 8/6/2018 | OC-GW-79S 8/7/2018 | OC-PZ-16RRR 8/7/2018 | OC-PZ-17RRR 8/7/2018 | OC-GW-18R 8/7/2018 | OC-PZ-24 8/6/2018 | OC-PZ-25 8/6/2018 |
|------------------------------|------------------------|------------------------|----------------------|-----------------------|-----------------------|-------------------------|-------------------------|-----------------------|----------------------|----------------------|
| Parameter Name | | | | | | | | | | |
| Metals, Filtered (mg/L) | | | | | | | | | | |
| Aluminum | 1.5 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.1 J | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Chromium | 0.37 | 0.0031 J | 0.003 J | 0.003 J | 0.012 | 0.014 | 0.0086 | 0.011 | 0.034 | 0.01 |
| Inorganics (mg/L) | | | | | | | | | | |
| Nitrogen, as Ammonia | 120 | 33 | 76 | 35 | 72 | 37 | 42 | 33 | 26 | 34 |
| Chloride | 310 | 190 | 280 | 10 | 220 | 270 | 20 | 280 | 9.3 | 30 |
| Sulfate | 1500 | 170 | 40 | 480 | 430 | 540 | 480 | 240 | 790 | 450 |
| Specific Conductance (mS/cm) | 3600 | 1200 | 1100 | 1400 | 1800 | 2000 | 1500 | 1700 | 1900 | 1400 |

Notes:

mg/L - milligrams per liter

mS/cm - milliSiemen per centimeter

U - analyte not detected,

value shown is detection limit

J - value is estimated

Prepared by: KMS 11/27/18 Checked by: CTM 11/30/18

Table 2-3 Slurry Wall/Cap Analytical Results for Second Quarter 2018 Surface Water Sampling Semi-Annual Status Report No. 23 Olin Chemical Superfund Site Wilmington, Massachusetts

| | OC-ISCO1 | OC-ISCO2 | OC-ISCO3 | OC-PZ-16RRRSW | OC-PZ-17RRRSW | OC-PZ-18RSW | DUP PZ18RSW | OC-SD-17 |
|------------------------------|-----------|-----------|-----------|---------------|---------------|-------------|-------------|-----------|
| | 5/22/2018 | 5/22/2018 | 5/22/2018 | 5/22/2018 | 5/22/2018 | 5/22/2018 | 5/22/2018 | 5/22/2018 |
| Parameter Name | | | | | | | | |
| Metals, Total (mg/L) | | | | | | | | |
| Aluminum | 180 J | 610 | 81 J | 390 | 390 | 200 | 210 | 420 |
| Chromium | 14 | 63 | 1.0 J | 50 | 73 | 14 | 14 | 78 |
| Sodium | 150000 | 140000 | 160000 | 150000 | 160000 | 150000 | 150000 | 160000 |
| Metals, Filtered (mg/L) | | | | | | | | |
| Aluminum | 87 J | 98 J | 200 U | 130 J | 160 J | 110 J | 110 J | 180 J |
| Chromium | 8.8 | 15 | 0.05 U | 21 | 40 | 9.3 | 9.1 | 45 |
| Sodium | 130000 | 120000 | 150000 | 130000 | 140000 | 140000 | 140000 | 140000 |
| Inorganics (mg/L) | | | | | | | | |
| Nitrogen, as Ammonia | 17 | 29 | 1.2 | 31 | 32 | 18 | 17 | 29 |
| Chloride | 240 | 190 | 330 | 220 | 230 | 240 | 240 | 230 |
| Sulfate | 98 | 200 | 32 | 210 | 210 | 100 | 100 | 210 |
| Nitrate as N | 0.12 | 0.3 | 1.0 | 0.25 | 0.17 | 0.12 | 0.12 | 0.16 |
| Nitrite as N | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Specific Conductance (mS/cm) | 1100 | 1200 | 1200 | 1300 | 1300 | 1100 | 1100 | 1300 |

Notes:

mg/L - milligrams per liter

mS/cm - milliSiemen per centimeter

U - not detected,

value is the detection limit

J - value is estimated

Prepared by: KMS 11/27/18 Checked by: CTM 11/30/18

Plant B Analytical Results for RGP Sampling (April 2018 - September 2018) Semi-Annual Status Report No. 23 Olin Chemical Superfund Site Wilmington, Massachusetts

| | Plant B Influent | Plant B Influent | Plant B Influent | IDW | IDW | IDW | IDW | IDW | IDW | IDW |
|------------------------------|------------------|------------------|------------------|--------------|---------------|--------------|---------------|--------------|--------------|---------------|
| | OC-INF-041918 | OC-INF-051618 | OC-INF-061318 | OC-T4-040418 | OC-T10-040518 | OC-T5-040618 | OC-T11-040918 | OC-T3-041018 | OC-T4-041218 | OC-T10-041318 |
| | 4/19/2018 | 5/16/2018 | 6/13/2018 | 4/4/2018 | 4/5/2018 | 4/6/2018 | 4/9/2018 | 4/10/2018 | 4/12/2018 | 4/13/2018 |
| Parameter Name | | | | | | | | | | |
| VOCs (mg/L) | | | | | | | | | | |
| 1,4-Dioxane | | | | | | | | | | |
| Acetone | | | | | | | | | | |
| Methylene chloride | | | | | | | | | | |
| Phenolics, Total Recoverable | 0.0056 | 0.005 U | 0.0077 B | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| SVOCs (mg/L) | | | | | | | | | | |
| Bis(2-Ethylhexyl)phthalate | 0.026 J | 0.03 | 0.16 | 0.005 U | 0.00049 J | 0.005 U | 0.005 U | 0.0012 J | 0.005 U | 0.00054 J |
| Diethylphthalate | 0.0048 U | 0.0005 U | 0.0048 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U |
| Dimethylphthalate | 0.0048 U | 0.00015 J | 0.0048 U | 0.000068 J B | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U |
| TPH (mg/L) | | | | | | | | | | |
| Total Petroleum Hydrocarbons | | | | | | | | | | |
| Total Metals (mg/L) | | | | | | | | | | |
| Arsenic | 0.0067 J | 0.015 U | 0.01 J | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U |
| Chromium, Hexavalent | | | | | | | | | | |
| Copper | | | | | | | | | | |
| Iron | 5 | 3.6 | 9.8 | 0.026 J | 0.05 U | 0.05 U | 0.05 U | 0.046 J B | 0.062 | 0.05 U |
| Lead | | | | | | | | | | |
| Nickel | 0.0014 J | 0.0017 J | 0.0016 J | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Zinc | 0.025 | 0.028 | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.0083 J | 0.011 B | 0.016 B |
| Inorganic Compounds (mg/L) | | | | | | | | | | |
| Chloride | 200 | 180 | 310 | 250 | 260 | 260 | 270 | 270 | 280 | 290 |
| Chlorine | 0.2 U HF | 0.2 U HF | 0.2 U HF | 0.2 U HF | 0.2 U HF | 0.2 U HF | 0.2 U HF | 0.2 U HF | 0.2 U HF | 0.2 U HF |
| Nitrogen, as Ammonia | | | | | | | | | | |
| Sulfate | | | | | | | | <u> </u> | | |
| Total Suspended Solids | 8 | 2.5 J | 12 | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |

Notes:

mg/L - milligrams per liter

U - analyte not detected,

value shown is detection limit

- J value is estimated
- B Compound was found in the blank and sample
- * LCS or LCSD exceeds the control limits
- E Exceeded the calibration

Plant B Analytical Results for RGP Sampling (April 2018 - September 2018) Semi-Annual Status Report No. 23 Olin Chemical Superfund Site Wilmington, Massachusetts

| | IDW | IDW | IDW | IDW | IDW | IDW | IDW | IDW | IDW | IDW |
|------------------------------|--------------|---------------|--------------|--------------|---------------|---------------|--------------|--------------|---------------|--------------|
| | OC-T5-041718 | OC-T11-041818 | OC-T3-041918 | OC-T4-042018 | OC-T10-042318 | OC-T11-042718 | OC-T3-050218 | OC-T4-050318 | OC-T10-050418 | OC-T5-050418 |
| | 4/17/2018 | 4/18/2018 | 4/19/2018 | 4/20/2018 | 4/23/2018 | 4/27/2018 | 5/2/2018 | 5/3/2018 | 5/4/2018 | 5/4/2018 |
| Parameter Name | | | | | | | | | | |
| VOCs (mg/L) | | | | | | | | | | |
| 1,4-Dioxane | | | | | | | | | | |
| Acetone | | | | | | | | | | |
| Methylene chloride | | | | | | | | | | |
| Phenolics, Total Recoverable | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| SVOCs (mg/L) | | | | | | | | | | |
| Bis(2-Ethylhexyl)phthalate | 0.00044 J | 0.0024 J | 0.0006 J | 0.005 U | 0.00053 J | 0.0006 J | 0.005 U | 0.005 U | 0.0048 U | 0.0048 U |
| Diethylphthalate | 0.00048 U | 0.00048 U | 0.00048 U | 0.0005 U | 0.00048 U | 0.0005 U | 0.000066 J | 0.0005 U | 0.00015 J B | 0.00014 J B |
| Dimethylphthalate | 0.00048 U | 0.00048 U | 0.00048 U | 0.0005 U | 0.00048 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.00048 U | 0.00048 U |
| TPH (mg/L) | | | | | | | | | | |
| Total Petroleum Hydrocarbons | | | | | | | | | | |
| Total Metals (mg/L) | | | | | | | | | | |
| Arsenic | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U |
| Chromium, Hexavalent | | | | | | | | | | |
| Copper | | | | | | | | | | |
| Iron | 0.05 U | 0.05 U | 0.041 J | 0.34 | 0.05 U | 0.05 U | 0.044 J | 0.079 | 0.05 U | 0.05 U |
| Lead | | | | | | | | | | |
| Nickel | 0.01 U | 0.01 U | 0.0014 J | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.0016 J | 0.01 U | 0.01 U |
| Zinc | 0.044 | 0.01 U | 0.03 | 0.007 J B | 0.0093 J B | 0.0031 J | 0.005 J B | 0.01 B | 0.006 J | 0.0057 J |
| Inorganic Compounds (mg/L) | | | | | | | | | | |
| Chloride | 280 | 290 | 300 | 280 | 280 | 290 | 250 | 260 | 250 | 260 |
| Chlorine | 0.2 U HF | 0.2 U HF | 0.2 U HF | 0.2 U HF | 0.2 U HF | 0.2 U HF | 0.2 U HF | 0.2 U HF | 0.2 U HF | 0.2 U HF |
| Nitrogen, as Ammonia | | | | | | | | | | |
| Sulfate | | | | | | | | | | |
| Total Suspended Solids | 5 U | 5 U | 5 U | 2 J | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |

Notes:

mg/L - milligrams per liter

- U analyte not detected,
- value shown is detection limit
- J value is estimated
- B Compound was found in the blank and sample
- * LCS or LCSD exceeds the control limits
- E Exceeded the calibration

Plant B Analytical Results for RGP Sampling (April 2018 - September 2018) Semi-Annual Status Report No. 23 Olin Chemical Superfund Site Wilmington, Massachusetts

| | IDW | IDW | IDW | IDW | IDW | IDW | IDW | IDW | IDW | IDW |
|------------------------------|---------------|--------------|--------------|---------------|---------------|--------------|--------------|--------------|---------------|---------------|
| | OC-T11-050818 | OC-T3-051418 | OC-T4-051518 | OC-T10-051618 | OC-T11-051718 | OC-T5-051718 | OC-T3-052318 | OC-T4-052418 | OC-T10-052518 | OC-T11-053018 |
| | 5/8/2018 | 5/14/2018 | 5/15/2018 | 5/16/2018 | 5/17/2018 | 5/17/2018 | 5/23/2018 | 5/24/2018 | 5/25/2018 | 5/30/2018 |
| Parameter Name | | | | | | | | | | |
| VOCs (mg/L) | | | | | | | | | | |
| 1,4-Dioxane | | | | | | | | | | |
| Acetone | | | | | | | | | | |
| Methylene chloride | | | | | | | | | | |
| Phenolics, Total Recoverable | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| SVOCs (mg/L) | | _ | | | | | | _ | | |
| Bis(2-Ethylhexyl)phthalate | 0.005 U | 0.0018 J | 0.00086 J | 0.0017 J | 0.00046 J | 0.002 J | 0.00086 J | 0.0048 U | 0.0048 U | 0.00079 J |
| Diethylphthalate | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.00048 U | 0.00048 U | 0.00048 U | 0.0005 U |
| Dimethylphthalate | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.00048 U | 0.00048 U | 0.00048 U | 0.0005 U |
| TPH (mg/L) | | | | | | | | | | |
| Total Petroleum Hydrocarbons | | | | | | | | | | |
| Total Metals (mg/L) | | | | | | | | | | |
| Arsenic | 0.015 U | | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U |
| Chromium, Hexavalent | | | | | | | | | | |
| Copper | | | | | | | | | | |
| Iron | 0.05 U | | 0.1 | 0.05 U | 0.05 U | 0.05 U | 0.06 | 0.099 | 0.05 U | 0.05 U |
| Lead | | | | | | | | | | |
| Nickel | 0.01 U | | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Zinc | 0.0037 J | | 0.018 | 0.016 | 0.0072 J | 0.0042 J | 0.013 | 0.013 | 0.01 U | 0.01 U |
| Inorganic Compounds (mg/L) | | | | | | | | | | |
| Chloride | 300 | 310 | 300 | 250 | 270 | 270 | 310 | 300 | 220 | 260 |
| Chlorine | 0.2 U HF | 0.2 U HF | 0.2 U HF | 0.2 U HF | 0.2 U HF | 0.2 U HF | 0.2 U HF | 0.2 U HF | 0.2 U HF | 0.2 U HF |
| Nitrogen, as Ammonia | | | | | | | | | | |
| Sulfate | | | | | | | | | | |
| Total Suspended Solids | 2 J | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |

Notes:

mg/L - milligrams per liter

- U analyte not detected,
- value shown is detection limit
- J value is estimated
- B Compound was found in the blank and sample
- * LCS or LCSD exceeds the control limits
- E Exceeded the calibration

Plant B Analytical Results for RGP Sampling (April 2018 - September 2018) Semi-Annual Status Report No. 23 Olin Chemical Superfund Site Wilmington, Massachusetts

| | IDW | IDW | IDW | IDW | IDW | IDW | IDW | IDW | IDW |
|------------------------------|--------------|--------------|--------------|---------------|---------------|--------------|--------------|--------------|---------------|
| | OC-T5-053118 | OC-T3-060518 | OC-T4-060618 | OC-T10-060718 | OC-T11-061218 | OC-T5-061318 | OC-T3-061818 | OC-T4-061918 | OC-T10-062018 |
| | 5/31/2018 | 6/5/2018 | 6/6/2018 | 6/7/2018 | 6/12/2018 | 6/13/2018 | 6/18/2018 | 6/19/2018 | 6/20/2018 |
| Parameter Name | | | | | | | | | |
| VOCs (mg/L) | | | | | | | | | |
| 1,4-Dioxane | | | | | | | | | |
| Acetone | | | | | | | | | |
| Methylene chloride | | | | | | | | | |
| Phenolics, Total Recoverable | 0.0068 | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| SVOCs (mg/L) | | | | | | | | | |
| Bis(2-Ethylhexyl)phthalate | 0.005 U | 0.005 U | 0.00056 J | 0.005 U | 0.005 U | 0.00057 J | 0.0048 U | 0.0048 U | 0.00044 J |
| Diethylphthalate | 0.0005 U | 0.0005 U | 0.0005 U * | 0.0005 U * | 0.0005 U | 0.00048 U | 0.00048 U | 0.00048 U | 0.0005 U |
| Dimethylphthalate | 0.0005 U | 0.0005 U | 0.0005 U * | 0.0005 U * | 0.0005 U | 0.00048 U | 0.00048 U | 0.00048 U | 0.0005 U |
| TPH (mg/L) | | | | | | | | | |
| Total Petroleum Hydrocarbons | | | | | | | | | |
| Total Metals (mg/L) | | | | | | | | | |
| Arsenic | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U |
| Chromium, Hexavalent | | | | | | | | | |
| Copper | | | | | | | | | |
| Iron | 0.05 U | 0.076 | 0.18 | 0.05 U | 0.03 J | 0.05 U | 0.083 | 0.08 | 0.05 U |
| Lead | | | | | | | | | |
| Nickel | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Zinc | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Inorganic Compounds (mg/L) | | | | | | | | | |
| Chloride | 270 | 230 | 290 F2 | 270 | 310 | 320 | 330 | 310 | 290 |
| Chlorine | 0.2 U HF | 0.2 U HF | 0.2 U HF | 0.2 U HF | 0.2 U HF | 0.2 U HF | 0.2 U HF | 0.2 U HF | 0.2 U HF |
| Nitrogen, as Ammonia | | | | | | | | | |
| Sulfate | | | | | | | | | |
| Total Suspended Solids | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |

Notes:

mg/L - milligrams per liter

- U analyte not detected,
- value shown is detection limit
- J value is estimated
- B Compound was found in the blank and sample
- * LCS or LCSD exceeds the control limits
- E Exceeded the calibration

Plant B Analytical Results for RGP Sampling (April 2018 - September 2018) Semi-Annual Status Report No. 23 Olin Chemical Superfund Site Wilmington, Massachusetts

| | IDW | IDW | IDW | IDW | IDW | IDW | IDW | IDW | IDW | IDW |
|------------------------------|---------------|--------------|--------------|--------------|---------------|---------------|--------------|--------------|--------------|--------------|
| | OC-T11-062118 | OC-T5-062218 | OC-T3-062618 | OC-T4-062718 | OC-T10-070918 | OC-T11-070918 | OC-T3-070918 | OC-T4-070918 | OC-T5-070918 | OC-T3-072518 |
| | 6/21/2018 | 6/22/2018 | 6/26/2018 | 6/27/2018 | 7/9/2018 | 7/9/2018 | 7/9/2018 | 7/9/2018 | 7/9/2018 | 7/25/2018 |
| Parameter Name | | | | | | | | | | |
| VOCs (mg/L) | | | | | | | | | | |
| 1,4-Dioxane | | | | | 0.0004 U | 0.0004 U | 0.0004 U | 0.00032 J | 0.0004 U | 0.0004 U |
| Acetone | | | | | 0.0018 J * | 0.0013 J * | 0.0018 J * | 0.002 J * | 0.0022 J * | 0.0011 J |
| Methylene chloride | | | | | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.0014 J |
| Phenolics, Total Recoverable | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.01 U | 0.0054 J | 0.01 U | 0.033 | 0.01 U | 0.01 U |
| SVOCs (mg/L) | | | | | | | | | | |
| Bis(2-Ethylhexyl)phthalate | 0.00056 J | 0.00046 J | 0.005 U | 0.005 U | 0.01 U | 0.01 U | 0.01 U | 0.0025 J | 0.01 U | 0.01 U |
| Diethylphthalate | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U * |
| Dimethylphthalate | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U * |
| TPH (mg/L) | | | | | | | | | | |
| Total Petroleum Hydrocarbons | | | | | 5.6 U | 5.8 U | 5.8 U | 2.2 J | 5.9 U F1 | 5.5 U |
| Total Metals (mg/L) | | | | | | | | | | |
| Arsenic | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.00082 J | 0.00077 J | 0.00061 J | 0.0006 J | 0.00087 J | 0.00087 J |
| Chromium, Hexavalent | | | | | 0.0003 U | 0.0003 U | 0.0003 U | 0.0003 U | 0.0003 U | 0.0003 U |
| Copper | | | | | 0.0055 | 0.002 U | 0.002 U | 0.002 U | 0.00074 J | 0.01 |
| Iron | 0.05 U | 0.05 U | 0.076 | 0.056 | 0.1 U | 0.1 U | 0.28 | 0.17 | 0.1 U | 0.079 J |
| Lead | | | | | 0.00028 J B | 0.00028 J B | 0.0005 U | 0.0005 U | 0.00016 J B | 0.0005 U |
| Nickel | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.002 U | 0.002 U | 0.0011 J | 0.002 U | 0.002 U | 0.0013 J |
| Zinc | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Inorganic Compounds (mg/L) | | | | | | | | | | |
| Chloride | 330 | 340 | 200 | 290 | 290 | 280 | 280 | 280 | 270 | 270 |
| Chlorine | 0.2 U HF | 0.2 U HF | 0.2 U HF | 0.2 U HF | 0.02 U HF | 0.01 J HF | 0.02 U HF | 0.01 J HF | 0.02 U HF | 0.02 U HF |
| Nitrogen, as Ammonia | | | | | 0.16 J B | 0.19 J B | 0.1 J B | 0.15 J B | 0.14 J B | 0.11 J F1 |
| Sulfate | | | | | 60 | 56 | 46 | 50 | 48 | 49 |
| Total Suspended Solids | 5 U | 5 U | 5 U | 5 U | 4 U | 4 U | 4 U | 4 U | 4 U | 4 U |

Notes:

mg/L - milligrams per liter

- U analyte not detected,
- value shown is detection limit
- J value is estimated
- B Compound was found in the blank and sample
- * LCS or LCSD exceeds the control limits
- E Exceeded the calibration

Table 3-1 Plant B Analytical Results for RGP Sampling (April 2018 - September 2018) Semi-Annual Status Report No. 23

Olin Chemical Superfund Site Wilmington, Massachusetts

| | IDW | IDW | IDW | IDW |
|------------------------------|--------------|--------------|---------------|---------------|
| | OC-T4-072518 | OC-T5-072618 | OC-T10-080618 | OC-T11-080718 |
| | 7/25/2018 | 7/26/2018 | 8/6/2018 | 8/7/2018 |
| Parameter Name | 7/25/2010 | 7/20/2010 | 0/0/2010 | 0/1/2010 |
| VOCs (mg/L) | | | | |
| 1.4-Dioxane | 0.0004 U | 0.0004 U | 0.0004 U | 0.0004 U |
| Acetone | 0.0004 J | 0.0004 J | 0.0029 J | 0.0004 J |
| Methylene chloride | 0.0014 U | 0.0013 U | 0.005 U | 0.0010 U |
| Phenolics. Total Recoverable | 0.01 U | 0.029 | 0.0056 J | 0.01 U |
| SVOCs (mg/L) | 0.01 0 | 0.023 | 0.0000 0 | 0.01 0 |
| Bis(2-Ethylhexyl)phthalate | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Diethylphthalate | 0.005 U * | 0.005 U * | 0.005 U * | 0.005 U * |
| Dimethylphthalate | 0.005 U * | 0.005 U | 0.005 U * | 0.005 U * |
| TPH (mg/L) | 0.000 0 | 0.000 0 | 0.000 0 | 0.000 0 |
| Total Petroleum Hydrocarbons | 5.3 U | 4.8 U | 3.3 J B * | 5.3 U |
| Total Metals (mg/L) | | | | |
| Arsenic | 0.00056 J | 0.00065 J | 0.00075 J | 0.00059 J |
| Chromium, Hexavalent | 0.00018 J | 0.0003 U | 0.0003 U | 0.0003 U |
| Copper | 0.002 U | 0.002 U | 0.0007 J | 0.002 U |
| Iron | 0.14 | 0.1 U | 0.1 U | 0.1 U |
| Lead | 0.0005 U | 0.0005 U | 0.00034 J | 0.00017 J |
| Nickel | 0.002 U | 0.0015 J | 0.0018 J | 0.0017 J |
| Zinc | 0.02 U | 0.01 J | 0.02 U | 0.02 U |
| Inorganic Compounds (mg/L) | | | | |
| Chloride | 270 | 300 | 280 | 270 |
| Chlorine | 0.02 U HF | 0.02 U HF | 0.02 U HF | 0.02 U HF |
| Nitrogen, as Ammonia | 0.2 U | 0.17 J B | 0.15 J B | 0.14 J |
| Sulfate | 51 | 53 | 51 | 51 |
| Total Suspended Solids | 4 U | 4 U | 4 U | 4 U |
| | • | | | |

Prepared by: KMS 11/27/18

Checked by: CTM 11/30/18

Notes:

mg/L - milligrams per liter

- U analyte not detected,
- value shown is detection limit
- J value is estimated
- B Compound was found in the blank and sample
- * LCS or LCSD exceeds the control limits
- E Exceeded the calibration range

Table 3-2
Plant B Analytical Results for Second Quarter 2018 Groundwater Sampling
Semi-Annual Status Report No. 23
Olin Chemical Superfund Site
Wilmington, Massachusetts

| | OC-GW-16R |
|----------------------------------------|---------------------------|
| | 5/21/2018 |
| Parameter Name | |
| Volatile Organics (mg/L) | |
| 2,4,4-Trimethyl-1-pentene | 1.1 |
| 2,4,4-Trimethyl-2-pentene | 0.36 |
| Semivolatile Organics (mg/L) | |
| Bis(2-Ethylhexyl)phthalate | 0.11 U |
| N-Nitrosodiphenylamine | 0.041 J |
| Metals, Filtered (mg/L) | |
| Iron | 2.4 |
| Inorganics (mg/L) | |
| Nitrogen, as Ammonia | 3.5 |
| рН | 6.8 J |
| Volatile Petroleum Hydrocarbons (mg/L) | |
| Benzene | 0.02 U |
| C5-C8 Aliphatics | 2.2 |
| C5-C8 Aliphatics (unadj.) | 2.2 |
| C9-C10 Aromatics (unadj.) | 0.017 J |
| C9-C12 Aliphatics | 0.56 |
| C9-C12 Aliphatics (unadj.) | 0.59 |
| Ethylbenzene | 0.02 U |
| Methyl Tertbutyl Ether | 0.02 U |
| Naphthalene | 0.02 U |
| Toluene | 0.018 J |
| Xylene, o | 0.016 J |
| Xylenes (m&p) | 0.04 U |
| . | B |
| Notes: | Prepared by: KMS 11/27/18 |
| mg/L - milligrams per liter | Checked by: CTM 11/30/18 |
| U - analyte not detected, | |
| value shown is reporting limit | |
| J - value is estimated | |
| | |

Table 3-3

Plant B Analytical Results for Third Quarter 2018 Groundwater Sampling
Semi-Annual Status Report No. 23

Olin Chemical Superfund Site

Wilmington, Massachusetts

| | OC-GW-16R |
|----------------------------------------|---------------------------|
| | 8/8/2018 |
| Parameter Name | |
| Volatile Organics (mg/L) | |
| 2,4,4-Trimethyl-1-pentene | 1.6 |
| 2,4,4-Trimethyl-2-pentene | 0.63 J |
| Semivolatile Organics (mg/L) | |
| Bis(2-Ethylhexyl)phthalate | 0.025 U |
| N-Nitrosodiphenylamine | 0.056 |
| Metals, Filtered (mg/L) | |
| Iron | 2.0 |
| Inorganics (mg/L) | |
| Nitrogen, as Ammonia | 4.0 |
| pH | 6.7 J |
| Volatile Petroleum Hydrocarbons (mg/L) | |
| Benzene | 0.05 U |
| C5-C8 Aliphatics | 2.1 |
| C5-C8 Aliphatics (unadj.) | 2.2 |
| C9-C10 Aromatics (unadj.) | 0.25 U |
| C9-C12 Aliphatics | 0.42 |
| C9-C12 Aliphatics (unadj.) | 0.42 |
| Ethylbenzene | 0.05 U |
| Methyl Tertbutyl Ether | 0.05 U |
| Naphthalene | 0.05 U |
| Toluene | 0.014 J |
| Xylene, o | 0.05 U |
| Xylenes (m&p) | 0.1 U |
| N | D 11 1/10 11/07/11 |
| Notes: | Prepared by: KMS 11/27/18 |
| mg/L - milligrams per liter | Checked by: CTM 11/30/18 |
| U - analyte not detected, | |
| value shown is reporting limit | |
| J - value is estimated | |

Table 5-1 Private Well Analytical Results for Second Quarter 2018 Semi-Annual Status Report No. 23 Olin Chemical Superfund Site Wilmington, Massachusetts

| | OC-M01L6C | OC-M01L6D | OC-M02L07 | OC-M03L02 | OC-M03L2D | OC-M03L2F | OC-M03L07 | OC-M14L2B |
|------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | 6/12/2018 | 6/12/2018 | 6/12/2018 | 6/13/2018 | 6/13/2018 | 6/13/2018 | 6/12/2018 | 6/12/2018 |
| Parameter Name | | | | | | | | |
| NDMA/NDPA (ng/L) | | | | | | | | |
| N-Nitrosodi-n-propylamine | 2.1 U | 2 U | 2.1 U | 2.1 U | 2.1 U | 2 UJ | 2 U | 2.1 U |
| N-Nitrosodimethylamine | 2.1 U | 2 U | 2.1 U | 2.1 U | 2.1 U | 2 U | 2 U | 2.1 U |
| Semivolatile Organics (mg/L) | | | | | | | | |
| Bis(2-Ethylhexyl)phthalate | | | 0.0037 J | | | | | |
| Metals, Total (mg/L) | | | | | | | | |
| Chromium | | | 0.01 U | | | | | 0.01 U |
| Chromium, Hexavalent | | | 0.01 U | | | | | 0.01 U |
| Sodium | | | 7.4 | | | | | 25 |
| Inorganics (mg/L) | | | | | | | | |
| Nitrogen, as Ammonia | | | 0.2 | | | | | 0.22 |
| Chloride | | | 19 | | | | | 18 |
| Sulfate | | | 18 | | | | | 61 |
| Nitrate as N | | | 5 | | | | | 0.05 U |
| Nitrite as N | | | 0.05 U | | | | | 0.05 U |

Notes:

mg/L - milligram per liter

ng/L - nanograms per liter

U - analyte not detected,

value shown is detection limit

J - value is estimated

Table 5-1
Private Well Analytical Results for Second Quarter 2018
Semi-Annual Status Report No. 23
Olin Chemical Superfund Site
Wilmington, Massachusetts

| | OC-M24L116 | OC-M24L54 | OC-M24L63 | OC-M24L64 | OC-M24L66 | OC-M24L72A | OC-M24L94 | OC-M27L14C |
|------------------------------|------------|-----------|-----------|-----------|-----------|------------|-----------|------------|
| | 6/12/2018 | 6/12/2018 | 6/13/2018 | 6/13/2018 | 6/12/2018 | 6/13/2018 | 6/12/2018 | 6/12/2018 |
| Parameter Name | | | | | | | | |
| NDMA/NDPA (ng/L) | | | | | | | | |
| N-Nitrosodi-n-propylamine | 2.1 U | 2.1 U | 2 UJ | 2.1 UJ | 2.1 U | 2.1 UJ | 2 U | 2 U |
| N-Nitrosodimethylamine | 0.6 J | 12 | 2 U | 2.1 U | 2.1 U | 2.1 U | 2.1 | 2 U |
| Semivolatile Organics (mg/L) | | | | | | | | |
| Bis(2-Ethylhexyl)phthalate | | 0.0048 U | 0.0048 U | 0.0048 U | | | 0.0048 U | 0.0048 U |
| Metals, Total (mg/L) | | | | | | | | |
| Chromium | | 0.01 U | 0.0066 J | 0.01 U |
| Chromium, Hexavalent | | 0.01 U | 0.01 U | 0.01 U | | | 0.01 U | 0.01 U |
| Sodium | | 30 | 20 | 19 | 19 | 20 | 28 | 42 |
| Inorganics (mg/L) | | | | | | | | |
| Nitrogen, as Ammonia | | 0.22 | 0.2 U | 0.2 U | 0.17 J | 0.2 U | 0.15 J | 0.18 J |
| Chloride | | 89 | 110 | 110 | 95 | 130 | 110 | 170 |
| Sulfate | | 26 | 20 | 19 | 16 | 12 | 22 | 38 |
| Nitrate as N | | 0.05 U | 0.59 | 0.61 | 0.15 | 0.55 | 0.32 | 0.056 |
| Nitrite as N | | 0.05 U | 0.05 U | 0.05 U |

Notes:

mg/L - milligram per liter

ng/L - nanograms per liter

U - analyte not detected, value shown is detection limit

J - value is estimated

Prepared by: KMS 11/27/18 Checked by: KALS 11/30/2018

Table 5-2 Private Well Analytical Results for Third Quarter 2018 Semi-Annual Status Report No. 23 Olin Chemical Superfund Site Wilmington, Massachusetts

| | OC-M01L6C | OC-M01L6D | OC-M02L07 | OC-M03L02 | OC-M03L2D | OC-M03L07 | OC-M14L2B | OC-M15L2C |
|---------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | 9/25/2018 | 9/25/2018 | 9/25/2018 | 9/25/2018 | 9/25/2018 | 9/25/2018 | 9/25/2018 | 9/26/2018 |
| Parameter Name | | | | | | | | |
| NDMA/NDPA (ng/L) | | | | | | | | |
| N-Nitrosodi-n-propylamine | 2 U | 2.1 U | 2.1 U | 2 U | 2.1 U | 2 U | 2 U | 2 U |
| N-Nitrosodimethylamine | 0.58 J | 2.1 U | 2.1 U | 2 U | 2.1 U | 2 U | 2 U | 2 U |
| Metals, Total (mg/L) | | | | | | | | |
| Chromium | | | 0.01 U | | | | 0.01 U | 0.01 U |
| Chromium, Hexavalent | | | 0.01 U | | | | 0.01 UJ | 0.01 UJ |
| Sodium | | | 10 | | | | 24 | 22 |
| Inorganics (mg/L) | | | | | | | | |
| Nitrogen, as Ammonia | | | 0.2 U | | | | 0.2 U | 0.2 U |
| Chloride | | | 29 | | | | 18 | 120 |
| Nitrate as N | | | 6.3 | | | | 0.05 U | 0.12 |
| Nitrite as N | | | 0.05 U | | | | 0.05 U | 0.05 U |
| Sulfate | | | 22 | | | | 51 | 31 |

Notes:

mg/L - milligram per liter

ng/L - nanograms per liter

U - analyte not detected,

value shown is detection limit

J - value is estimated

Table 5-2 Private Well Analytical Results for Third Quarter 2018 Semi-Annual Status Report No. 23 Olin Chemical Superfund Site Wilmington, Massachusetts

| | OC-M24L54 | OC-M24L63 | OC-M24L64 | OC-M24L66 | OC-M24L72A | OC-M24L94 | OC-M27L14C |
|---------------------------|-----------|-----------|-----------|-----------|------------|-----------|------------|
| | 9/25/2018 | 9/26/2018 | 9/26/2018 | 9/26/2018 | 9/26/2018 | 9/26/2018 | 9/25/2018 |
| Parameter Name | | | | | | | |
| NDMA/NDPA (ng/L) | | | | | | | |
| N-Nitrosodi-n-propylamine | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2.1 U |
| N-Nitrosodimethylamine | 15 | 2 U | 2 U | 2 U | 2.9 | 2 U | 2.1 U |
| Metals, Total (mg/L) | | | | | | | |
| Chromium | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.0063 J | 0.01 U | 0.01 U |
| Chromium, Hexavalent | 0.01 U | 0.01 U | 0.01 U | | | 0.01 U | 0.01 U |
| Sodium | 31 | 18 | 18 | 22 | 15 | 23 | 42 |
| Inorganics (mg/L) | | | | | | | |
| Nitrogen, as Ammonia | 0.2 U | 0.21 U | 0.2 U |
| Chloride | 88 | 130 | 130 | 140 | 100 | 140 | 160 |
| Nitrate as N | 0.05 U | 0.5 | 0.49 | 0.24 | 8.9 | 0.05 U | 0.17 |
| Nitrite as N | 0.05 U | 0.05 U | 0.05 U |
| Sulfate | 27 | 24 | 24 | 22 | 23 | 22 | 41 |

Notes:

mg/L - milligram per liter

ng/L - nanograms per liter

U - analyte not detected,

value shown is detection limit

J - value is estimated

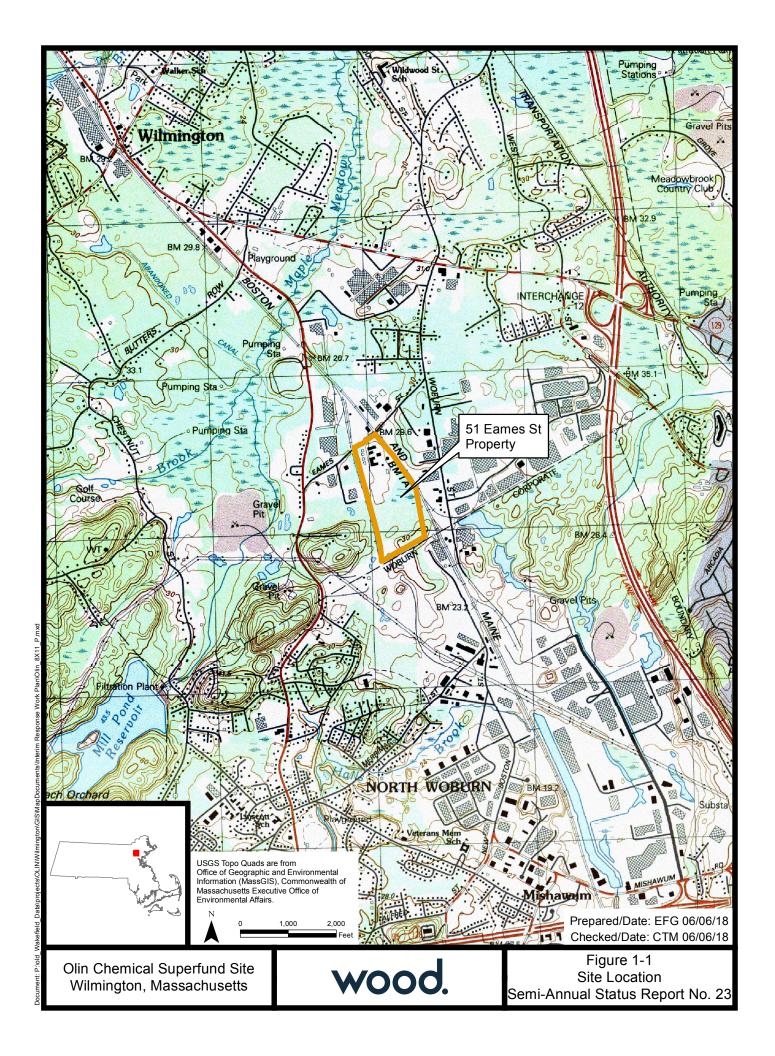
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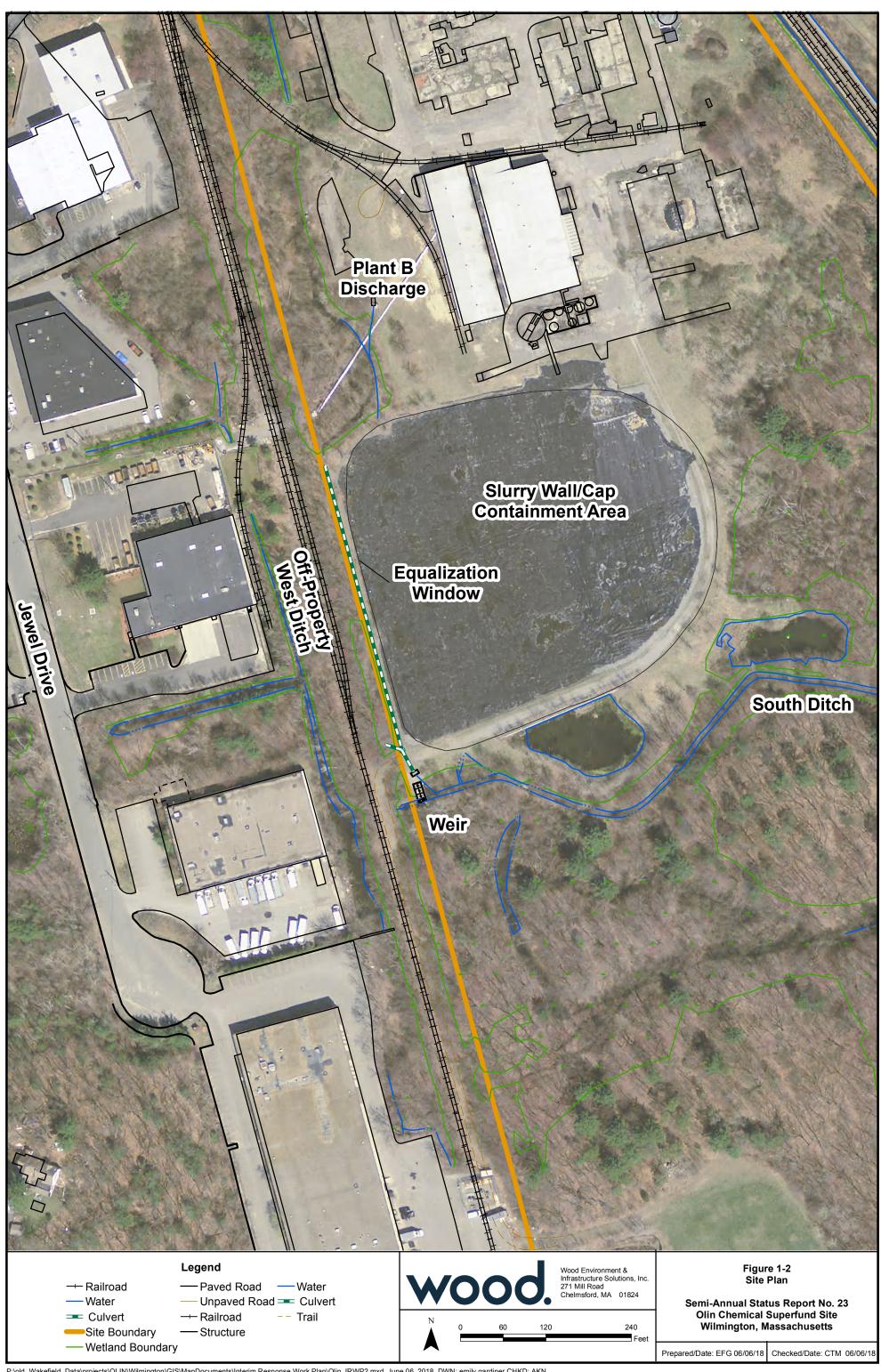
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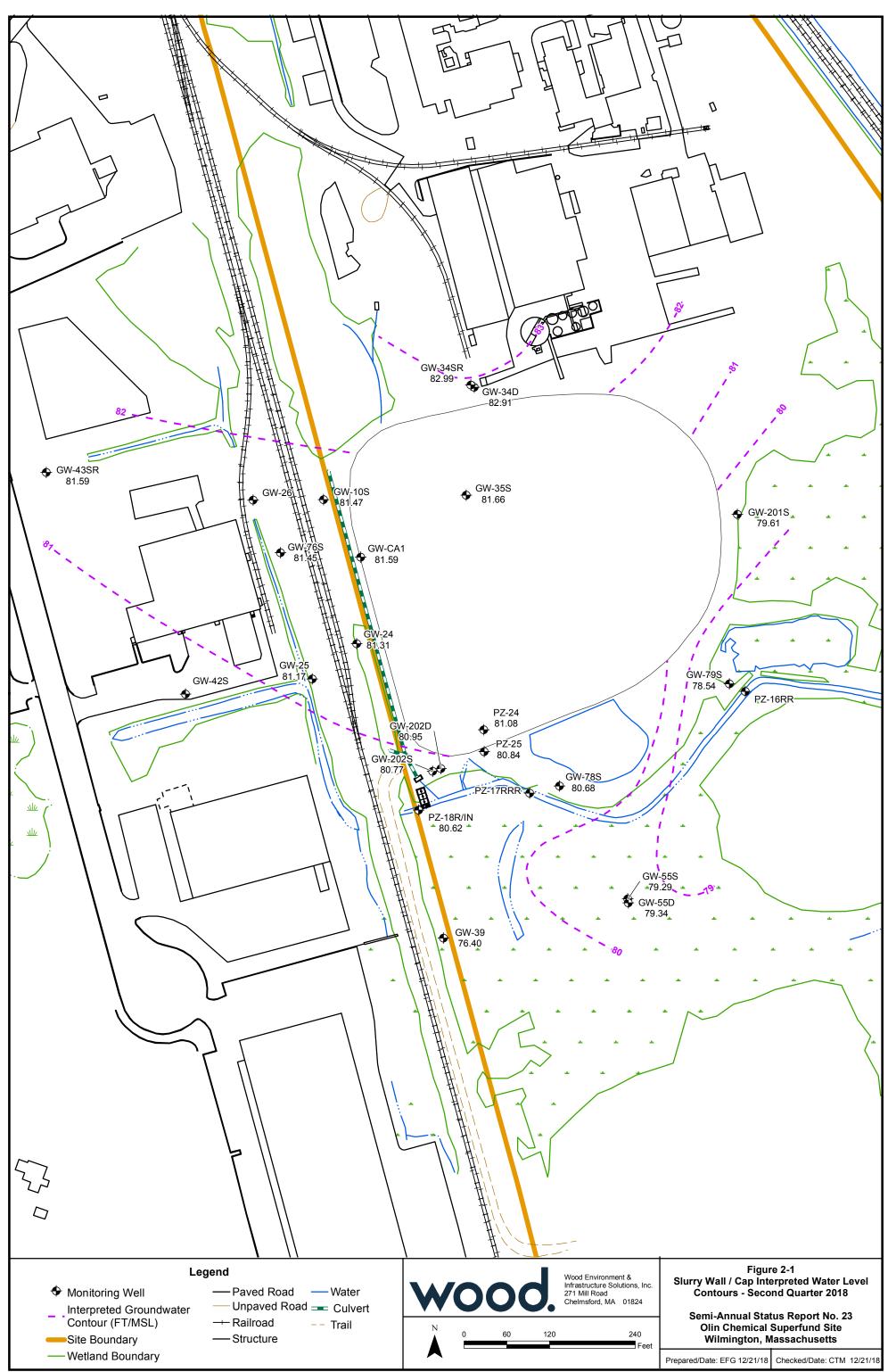
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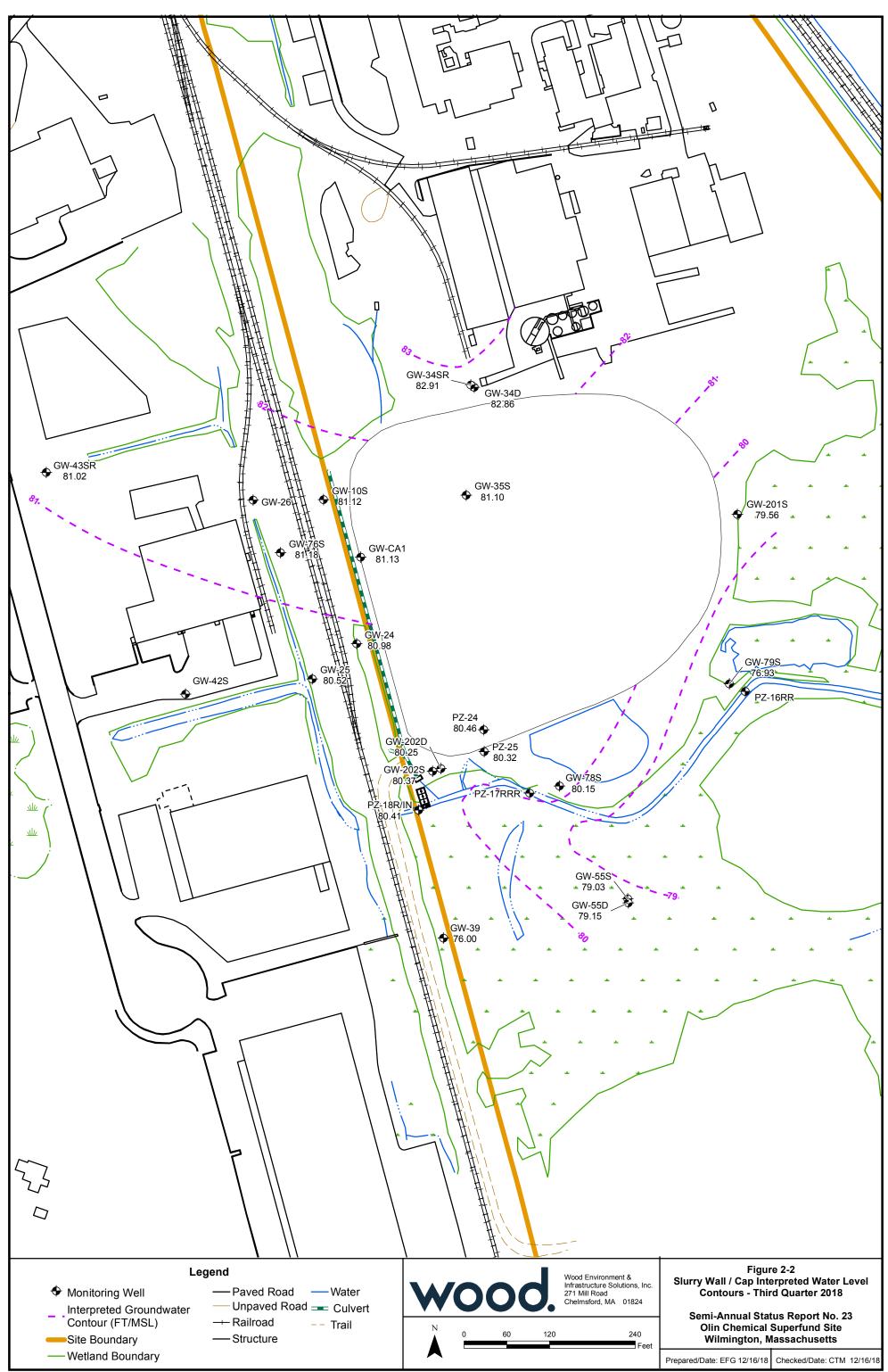
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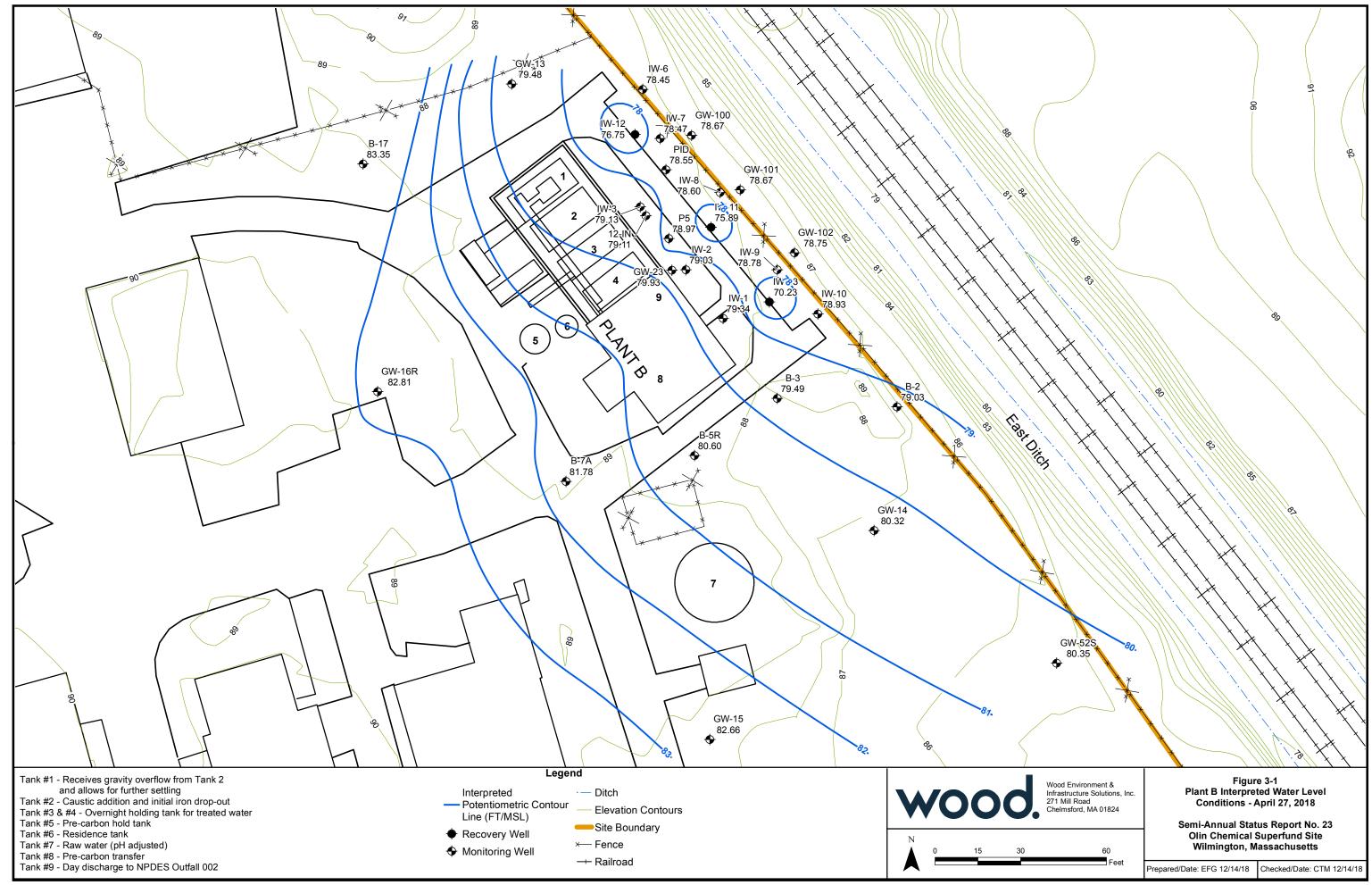


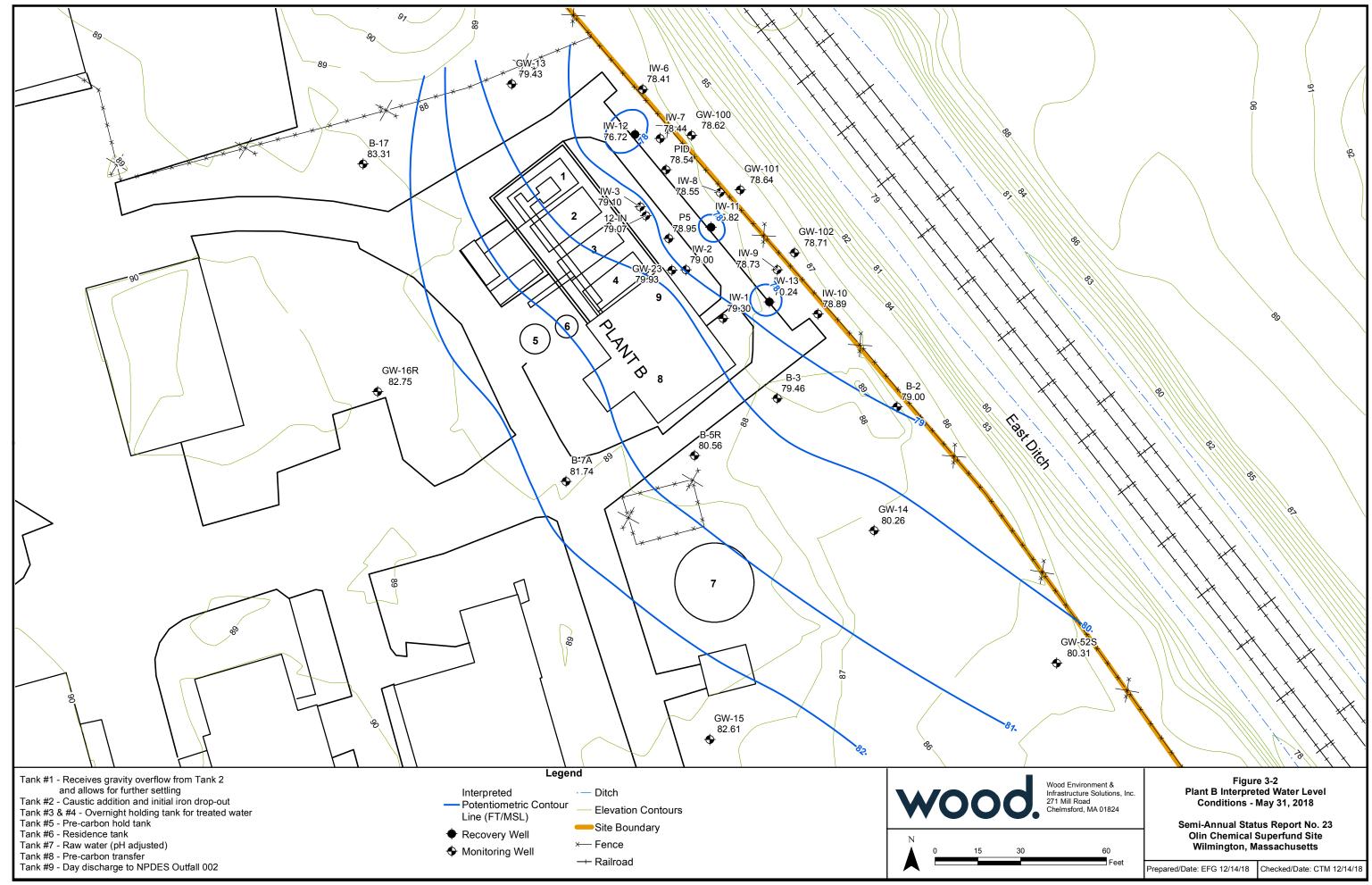


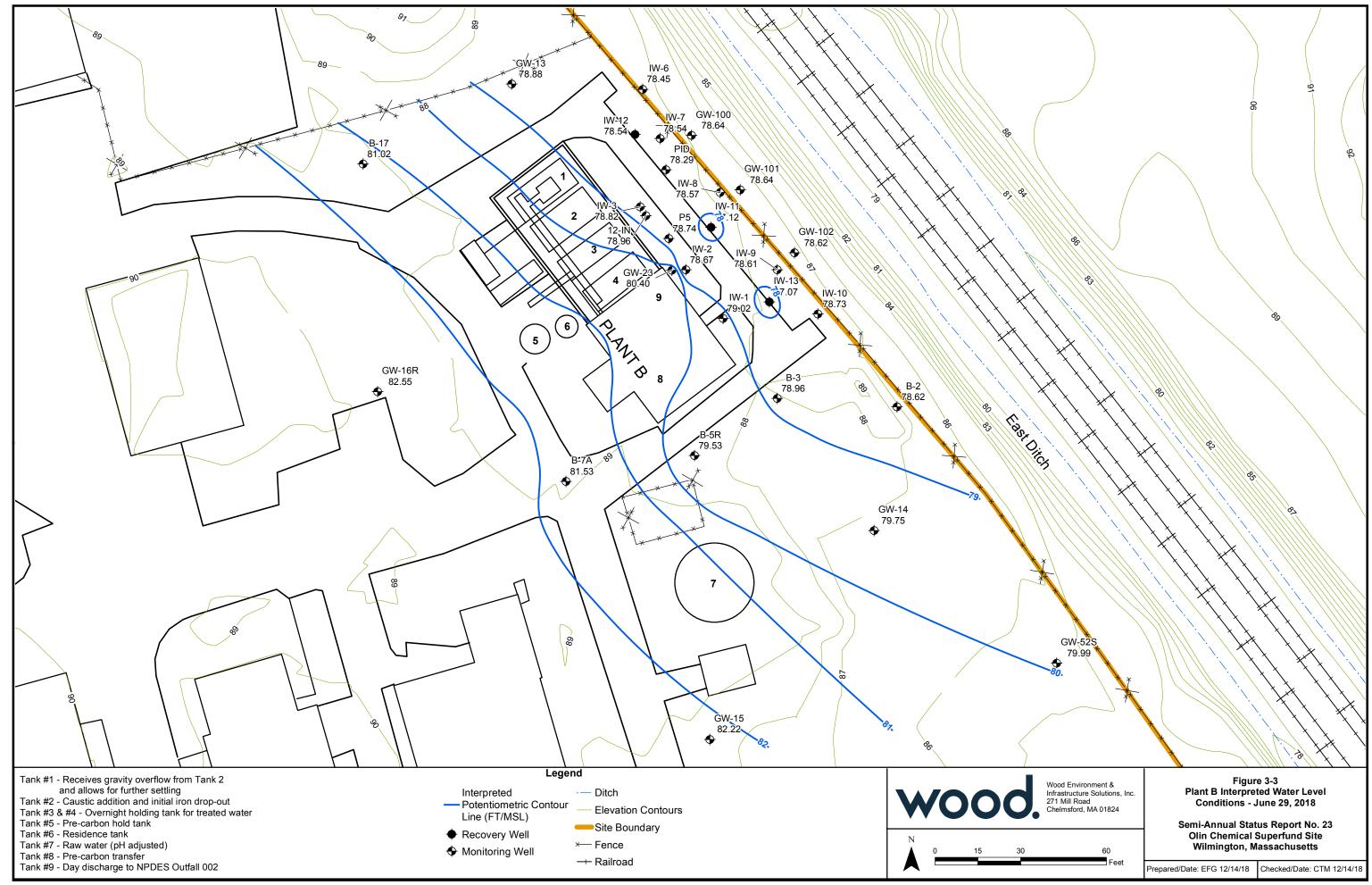


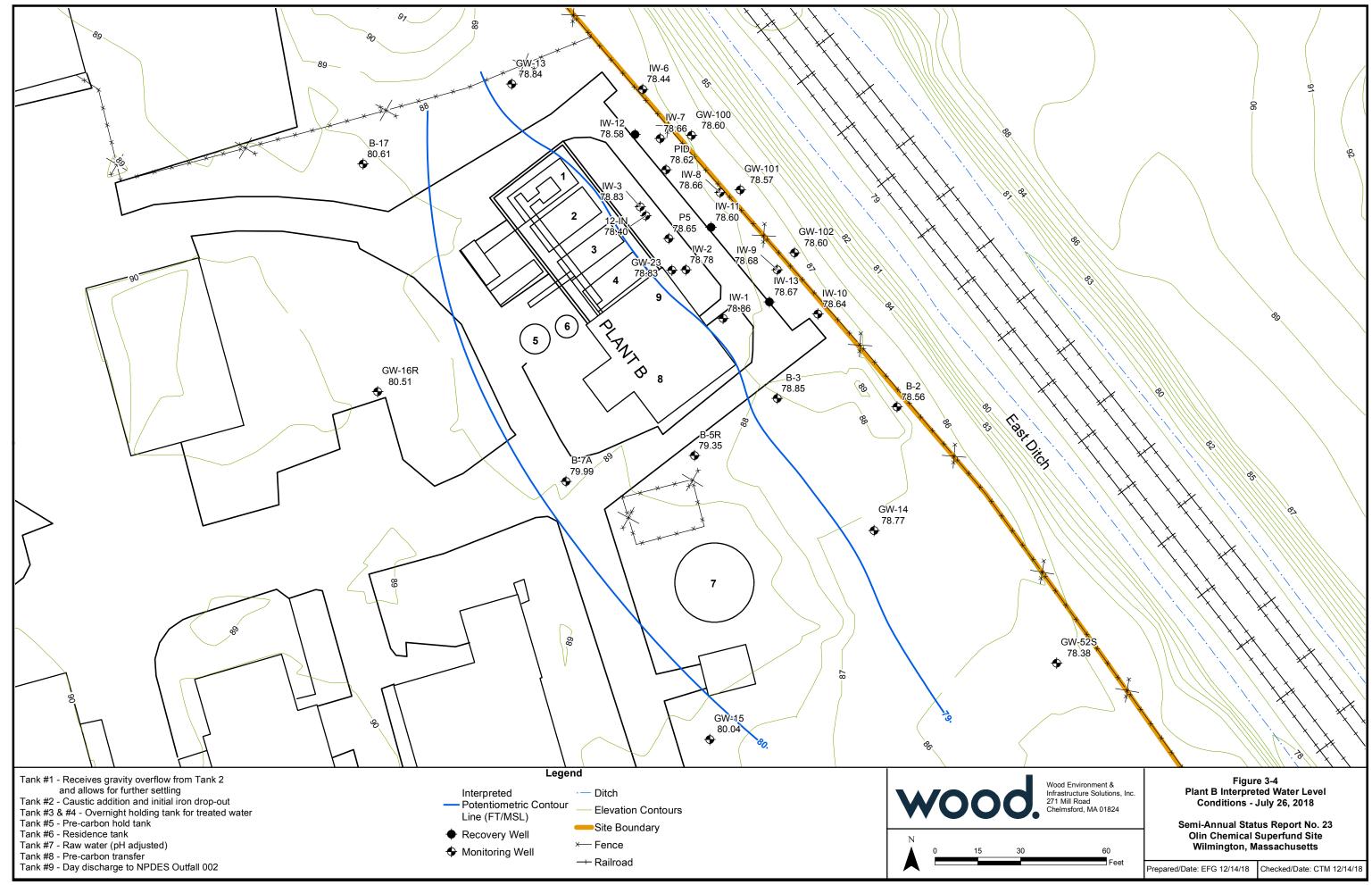


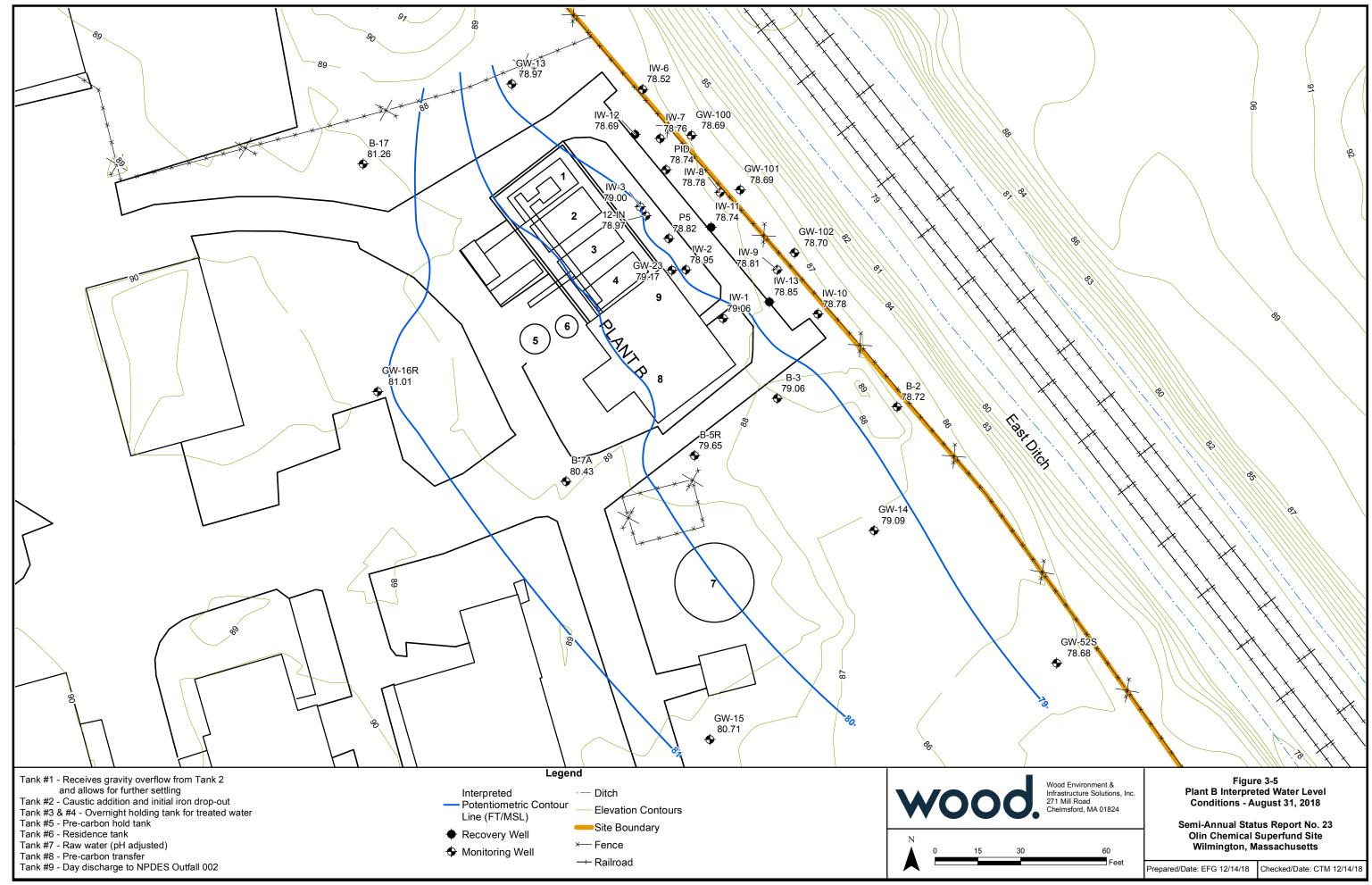


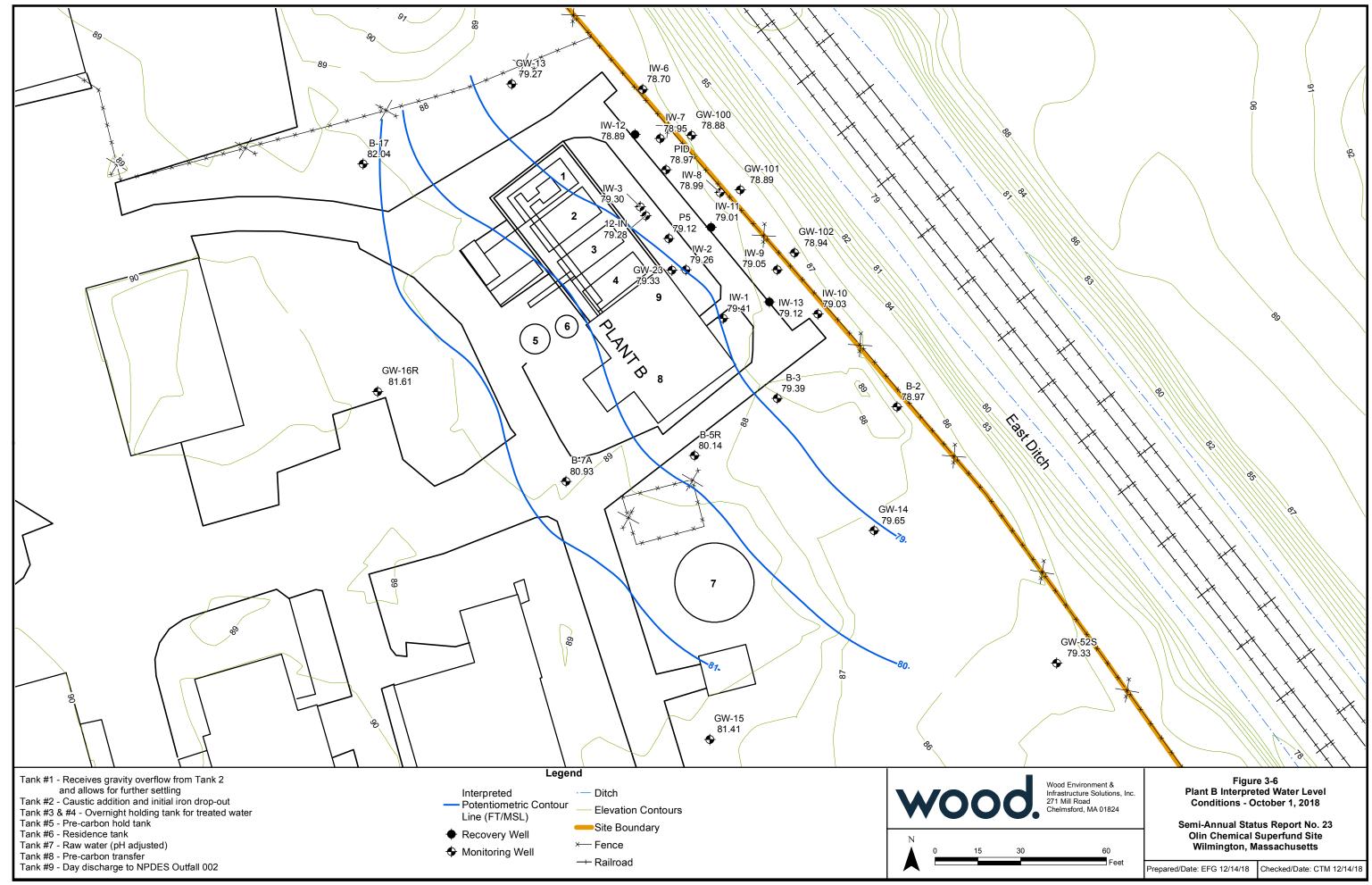


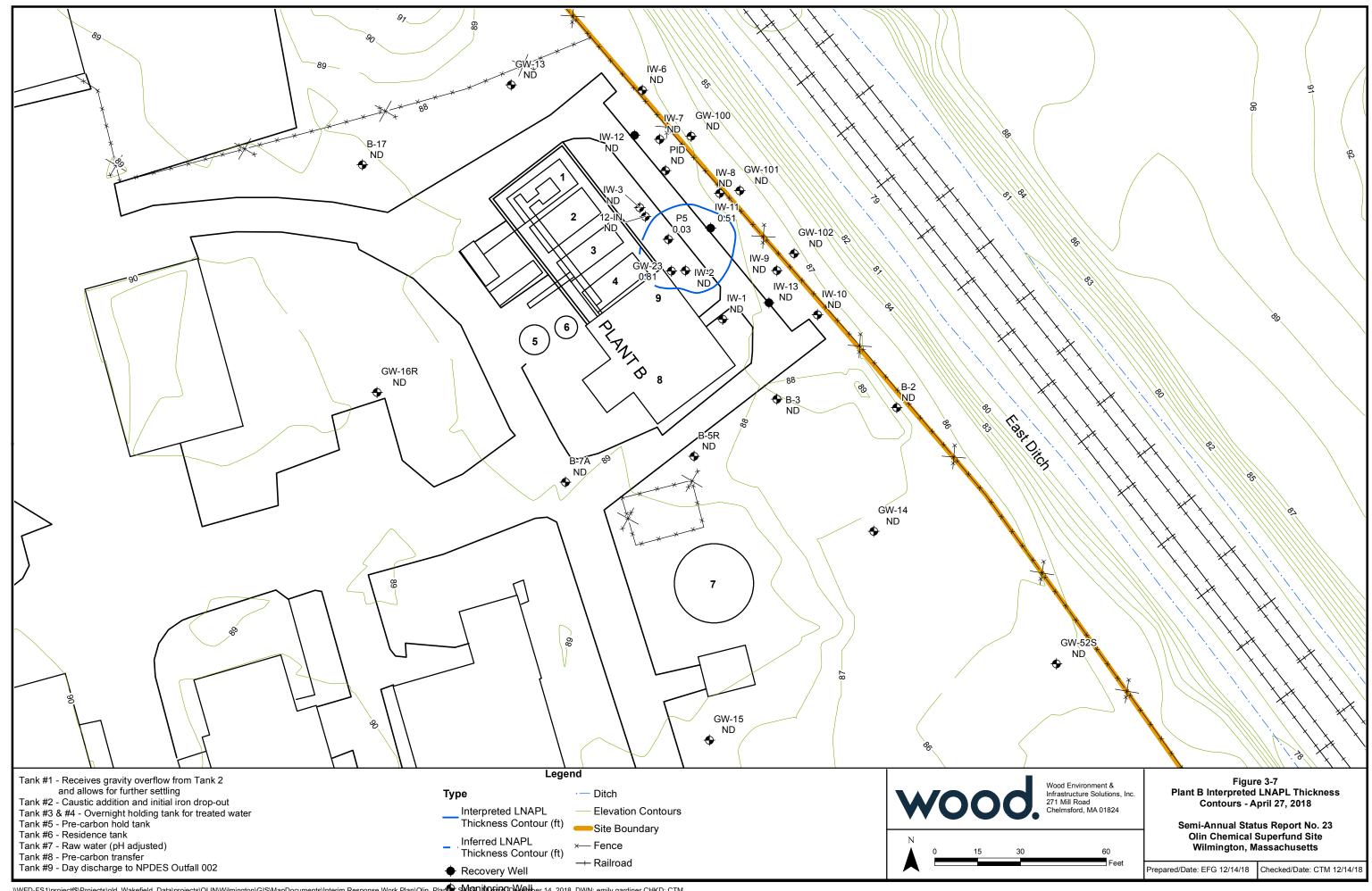


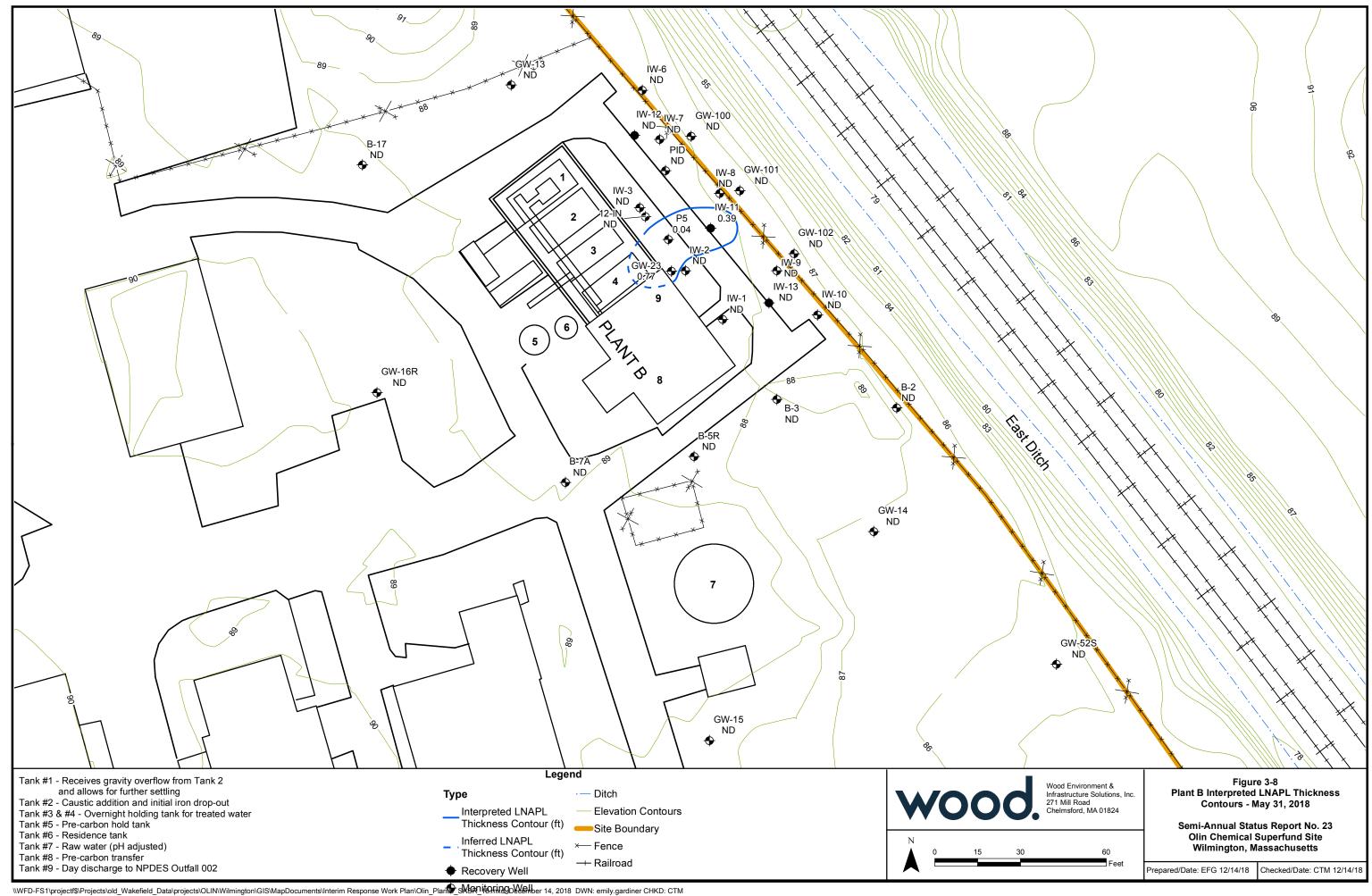


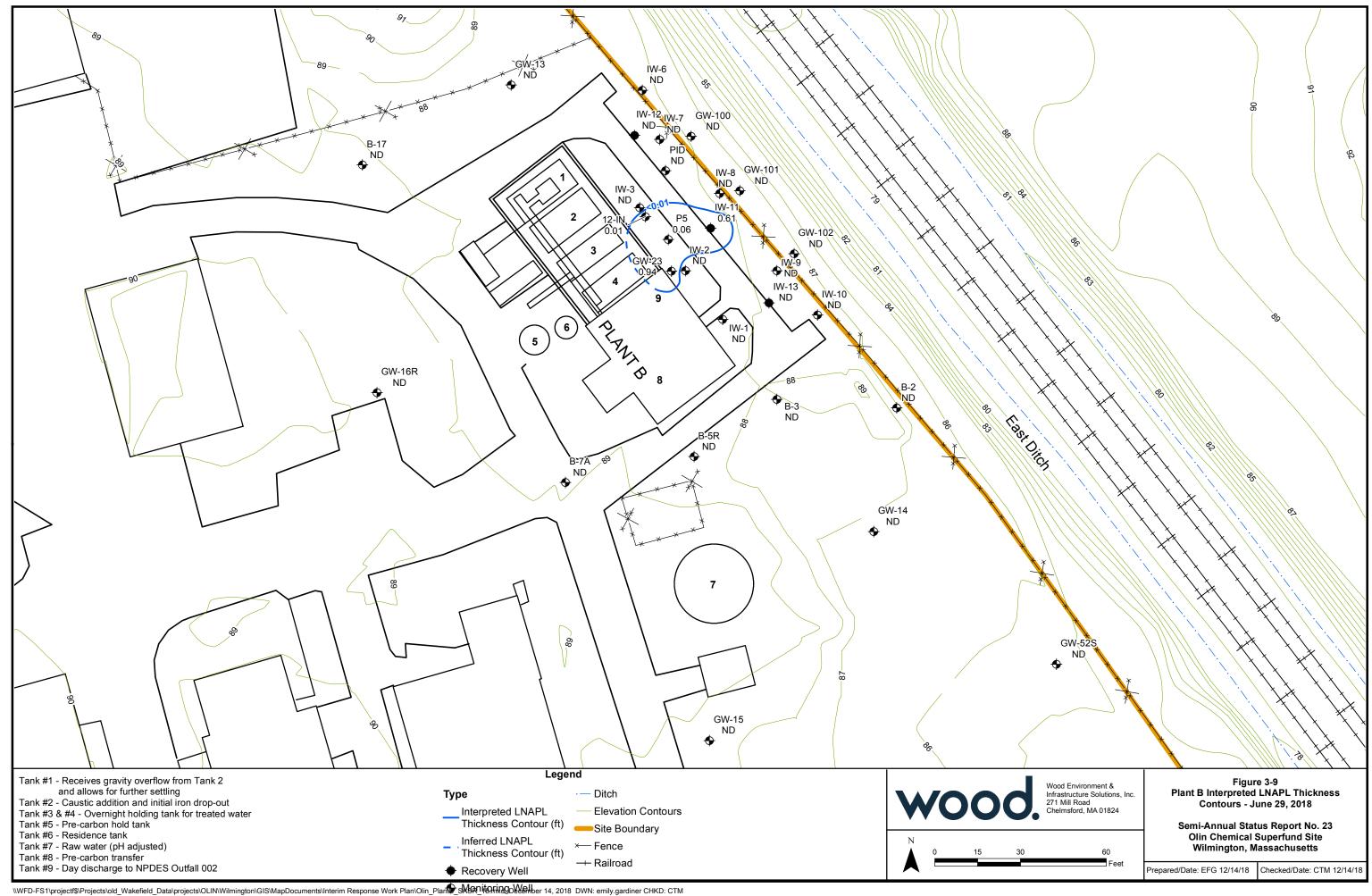


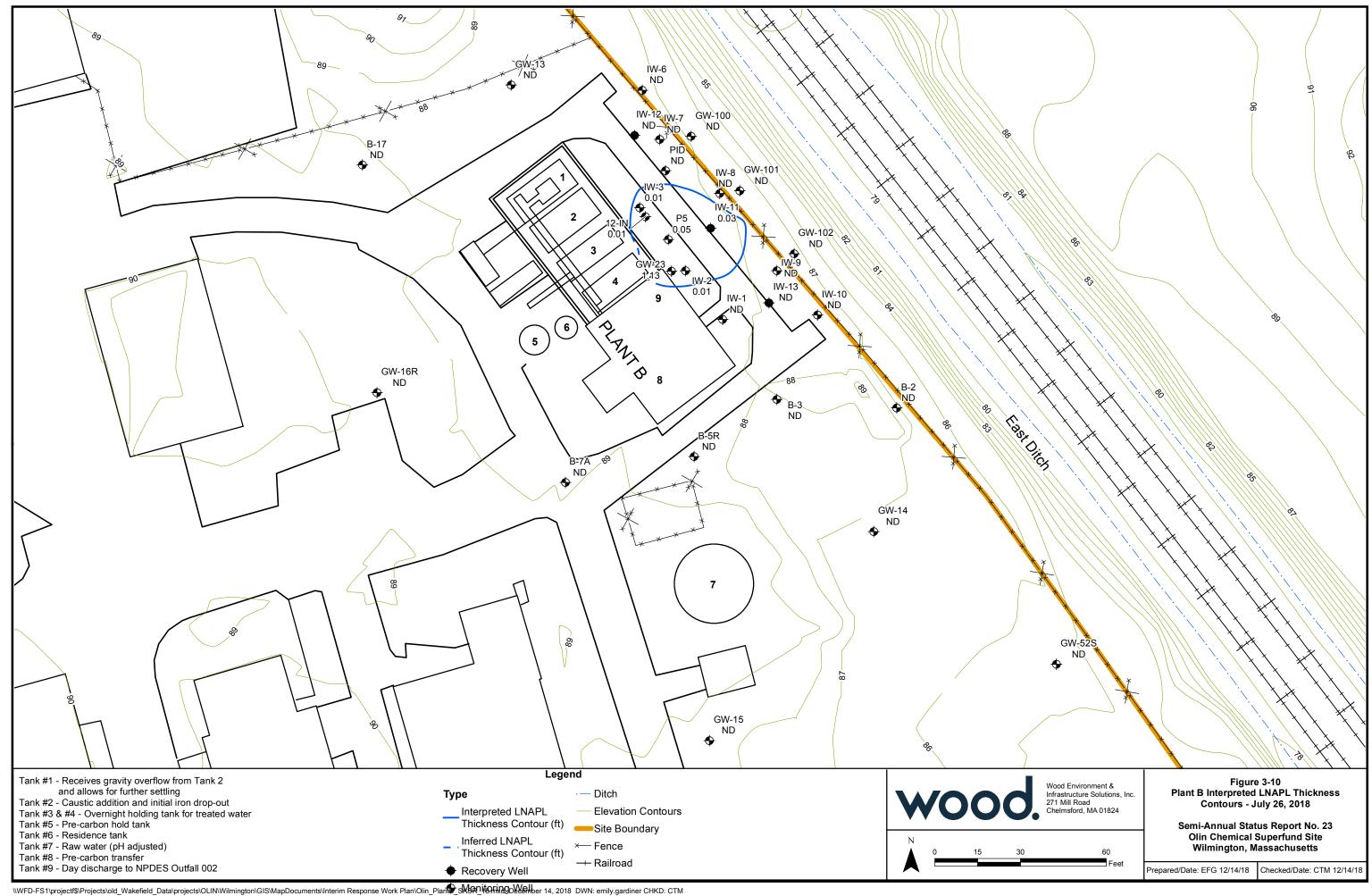


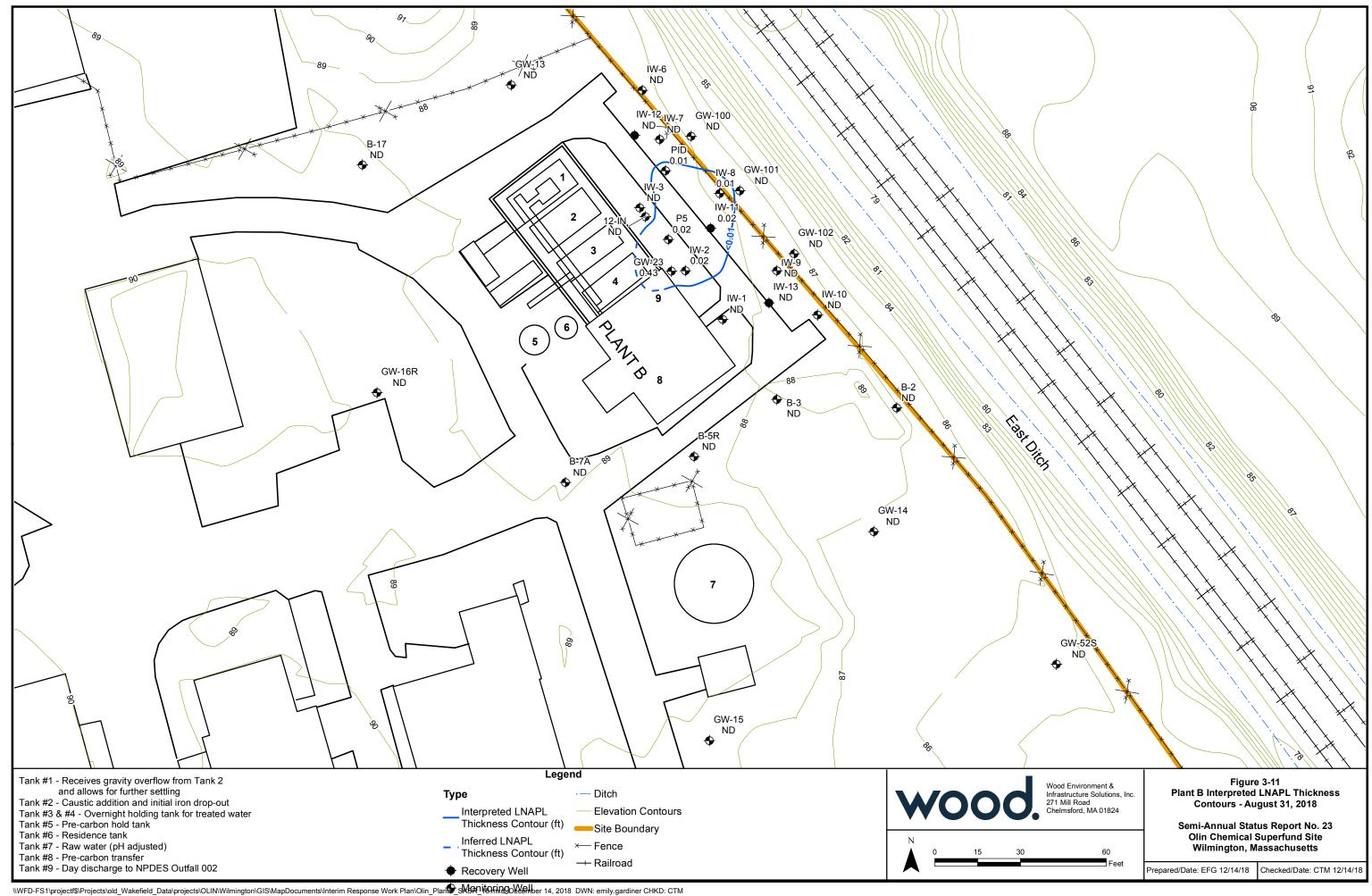












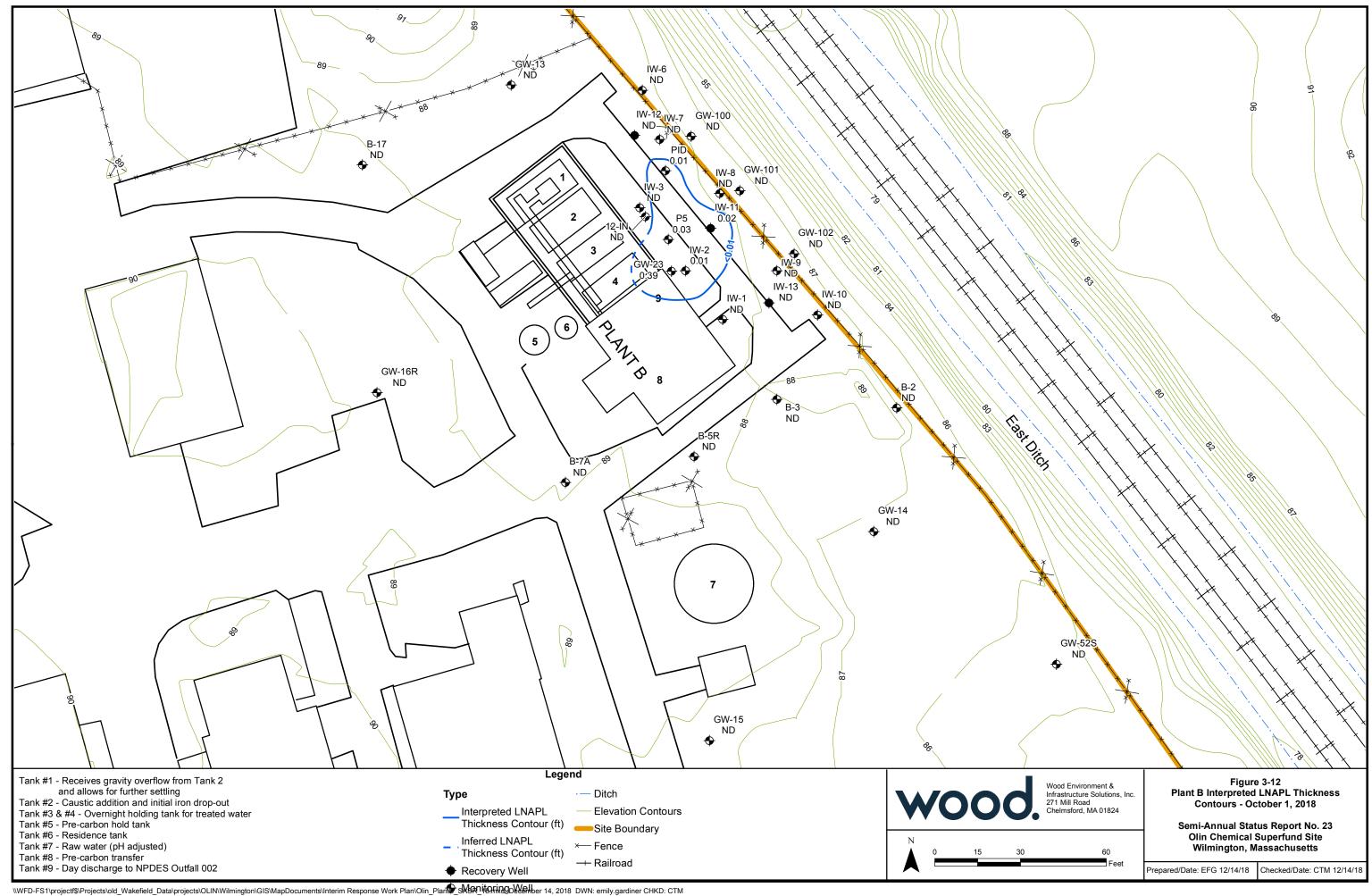


Figure 3-13
Monthly and Cumulative LNAPL Recovery
Semi-Annual Status Report No. 23
Olin Chemical Superfund Site
Wilmington, Massachusetts

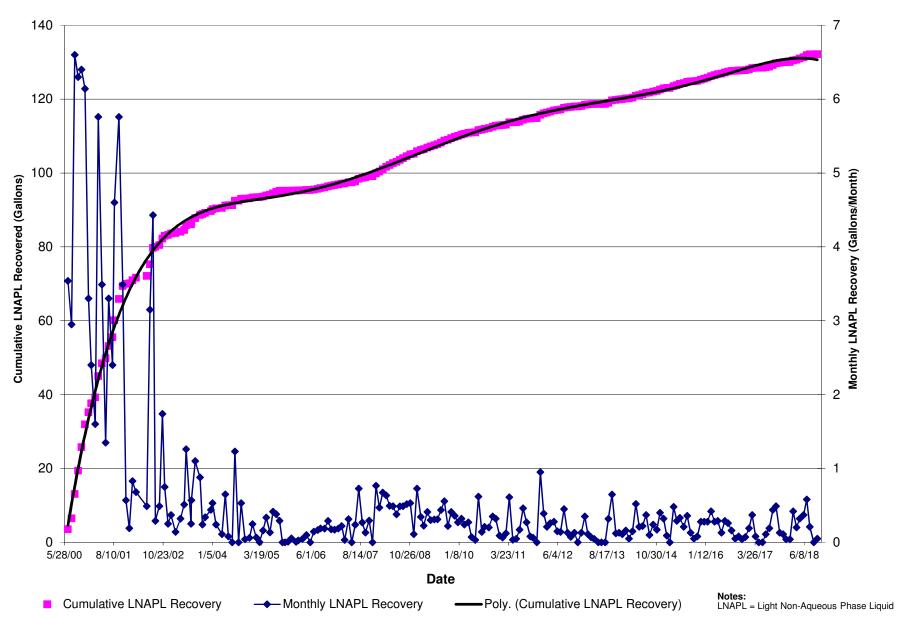
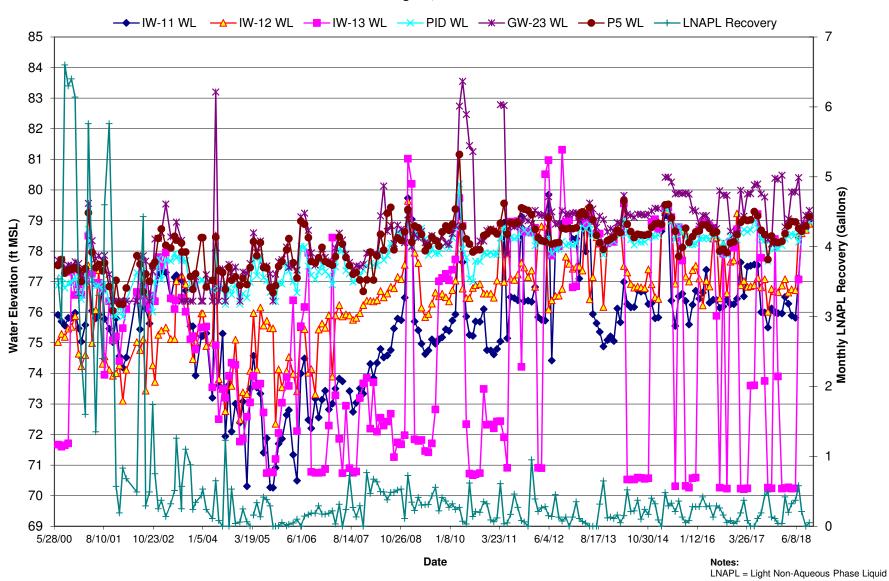
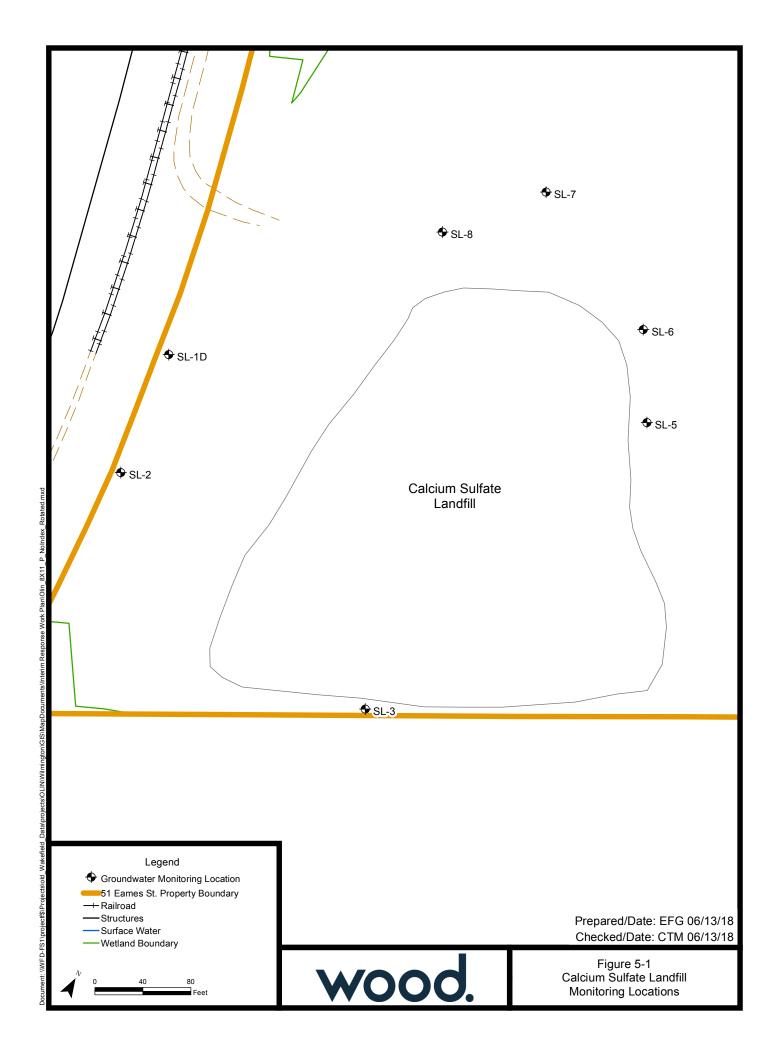


Figure 3-14
Water Levels (WL) and Monthly LNAPL Recovery
Semi-Annual Status Report No. 23
Olin Chemical Superfund Site
Wilmington, Massachusetts





wood.

Appendix A

Interim Response Steps Field Activity Reports



wood.

Appendix A1

Second Quarter 2018 Sampling Event





Interim Response Steps Field Activity Report Second Quarter 2018 Sampling Event

Olin Chemical Superfund Site Wilmington, Massachusetts Project 6107180016

Prepared for:



Interim Response Steps Field Activity Report Second Quarter 2018 Sampling Event

Olin Chemical Superfund Site Wilmington, Massachusetts

Project 6107180016

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3-Dec-18

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| | | | List of acronyms | | | | | | | |
| Amec F | oster Wl | neeler | Amec Foster Wheeler Environment and Infrastructure, Inc. | | | | | | | |
| DO | | | Dissolved Oxygen | | | | | | | |
| IRSWP | | | Interim Response Steps Work Plan | | | | | | | |
| LNAPL | | | Light Non-Aqueous Phase Liquid | | | | | | | |
| MACTE | C | | MACTEC Engineering and Consulting, Inc. | | | | | | | |
| NTU | | | Nephelometric Turbidity Units | | | | | | | |

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ORP Oxidation/Reduction Potential

RI/FS Remedial Investigation/Feasibility Study

SC Specific Conductivity

TAL TestAmerica Laboratories, Inc.

USEPA United States Environmental Protection Agency

UV Ultraviolet





1.0 INTRODUCTION

On behalf of the Olin Corporation (Olin), Wood Environment & Infrastructure Solutions, Inc. (Wood E&IS) formerly Amec Foster Wheeler, presents this summary report for field activities completed in association with the Second Quarter 2018 groundwater and surface water monitoring for the Slurry Wall/Cap Monitoring Program and the Plant B Monitoring Program. These activities were conducted consistent with the requirements and procedures contained in the Final Interim Response Steps Work Plan (IRSWP), Olin Chemical Superfund Site, 51 Eames Street, Wilmington, Massachusetts dated August 8, 2008 and the Volume IIIB, the Quality Assurance Project Plan, of the Final Remedial Investigation/Feasibility Study (RI/FS) Work Plan dated August 14, 2009 (MACTEC Engineering and Consulting, Inc. [MACTEC], 2009).

1.1 Limitations

This report, including its findings, opinions, and conclusions, is intended for the exclusive use and benefit of, and may be relied upon only by Olin Corporation and the United States Environmental Protection Agency (USEPA).



2.0 Slurry Wall/Cap monitoring program

The purpose of the Slurry Wall/Cap Monitoring Program is to monitor the concentrations of select constituents in groundwater and surface water in areas adjacent to and within the South Ditch of the former Olin Facility located at 51 Eames Street, Wilmington, Massachusetts.

The Second Quarter 2018 groundwater and surface water monitoring program includes collecting groundwater level measurements from select monitoring wells and piezometers, collecting and analyzing groundwater samples from 15 monitoring wells and five piezometers, and collecting and analyzing surface water samples from seven locations within the East Ditch and South Ditch. Groundwater and surface water sample locations are listed in **Table 1** and shown on **Figure 1**. The groundwater and surface water sampling program is further described in the Final IRSWP (MACTEC, 2008), which has been approved by the USEPA.

2.1 Scope of Work

The Slurry Wall/Cap Monitoring Program for this sampling event consists of collecting groundwater level measurements in the vicinity of the South Ditch area; collecting and analyzing groundwater samples from the following monitoring wells: GW-10S, GW-24, GW-25, GW-34SR, GW-34D, GW-35S, MP-2 #13, GW-43SR, GW-76S, GW-78S, GW-79S, GW-201S, GW-202S, GW-202D, and GW-CA-1; and piezometers: PZ-16RRR, PZ-17RRR, PZ-18R, PZ-24, and PZ-25; collecting and analyzing surface water samples from the following locations: ISCO-1, ISCO-2, ISCO-3, SD-17, PZ-16RRR, PZ-17RRR, and PZ-18R; and downloading water level and barometric pressure data from data loggers that have been installed in the following wells and piezometers: GW-10S, GW-35S, GW-CA1, GW-76S, GW-78S, GW-CA3S, GW-CA4S, PZ-24, PZ-25, and GW-6S. Monitoring wells, piezometers, and surface water sample locations are shown on **Figure 1**.

2.1.1 Groundwater Level Measurement

On May 15 through 18, 2018, Olin personnel completed a site reconnaissance of the monitoring well locations in the Slurry Wall/Cap Monitoring Program and collected groundwater level measurements. This included measuring depth to groundwater from 22 monitoring wells and piezometers using a water level meter. Groundwater level measurements and calculated groundwater elevations are summarized in **Table 2**.

2.1.2 Groundwater Sampling

On May 15 through 18, 2018, Olin personnel sampled groundwater from 15 monitoring wells and five piezometers using 2010 USEPA low stress (low flow) groundwater sampling methods.

Prior to low flow sampling, a Horiba U-52 multi-parameter water quality meter and a Hach 2100Q turbidity meter were calibrated according to the instrument manufacturer's specifications using certified calibration solutions.

Groundwater was purged using an adjustable rate peristaltic pump along with dedicated tubing at each monitoring location. During sampling activities, the purged groundwater was continuously monitored using the multi-parameter water quality meter for pH, temperature, specific conductivity (SC), dissolved oxygen (DO), and oxidation/reduction potential (ORP), while turbidity was monitored using the Hach 2100Q turbidity meter. Well purging continued at each location until these field parameters stabilized as indicated in Appendix A of the IRSWP.

Monitoring wells GW-24, PZ-16RRR, and PZ-17RRR went dry upon purging and could not be sampled by low flow methods. These wells were purged dry and sampled upon recovery, which is the alternative approved method. Samples collected by this method typically have elevated turbidity. The final low flow

wood.

purging field parameter measurements are presented in **Table 3**. Field data records for each groundwater monitoring location are attached in **Appendix A**.

Upon stabilization of groundwater parameters, groundwater samples were collected by directly filling the laboratory prepared sample bottles. A 0.45-micron pore diameter, in-line Teflon™ filter was used to field filter groundwater for dissolved metal analysis in accordance with the IRSWP. The samples were placed on ice and transferred to TestAmerica Laboratories, Inc. (TAL) of Buffalo, New York, under chain-of-custody for chemical analyses as summarized in **Table 4**. Copies of the chain-of-custody documents are provided in **Appendix B**. Laboratory analytical data are presented in the January 2019 Semi-Annual Status Report.

Purged groundwater from each monitoring well was collected in collapsible plastic containers, transported to the Block House building, adjacent to the Plant B groundwater treatment building, and containerized in a secured 55-gallon drum. Olin characterizes and disposes of that material in accordance with applicable regulations.

2.1.3 Surface Water Sampling

On May 22, 2018, Olin personnel collected seven surface water samples from downstream to upstream from the East Ditch and South Ditch. The locations are identified as ISCO-3, ISCO-2, PZ-16RRR, PZ-17RRR, SD-17, PZ-18R, and ISCO-1 as shown on **Figure 1**.

Before field activities began, a Horiba U-52 multi-parameter water quality meter and Hach 2100Q turbidity meter were properly calibrated to monitor surface water quality parameters at each location.

At each of the seven field locations, surface water parameter measurements (pH, temperature, SC, ORP, DO, and turbidity) were collected. Readings were collected by directly submersing the Horiba probe into the surface water until parameter stabilization. The final surface water field parameters are summarized in **Table 5**. Field data records from each surface water sample location are attached in **Appendix A**.

Filtered surface water samples (for dissolved metals analysis) were collected by submerging dedicated tubing attached to a peristaltic pump into the water column at a depth that minimized entraining floating or suspended sediment. The peristaltic pump provides positive pressure for field filtering the water through the 0.45-micron pore diameter filter for dissolved metal analysis.

Surface water samples were collected by directly filling the laboratory prepared glassware. The samples were then placed on ice for delivery to TAL of Buffalo, New York, under chain-of-custody for chemical analyses summarized in **Table 6**. Copies of the chain-of-custody documents are provided in **Appendix B**. Laboratory analytical data are presented in the January 2019 Semi-Annual Status Report.

2.1.4 Data Logger Data Download

Data loggers are deployed in 10 monitoring wells and piezometers: GW-10S, GW-35S, GW-CA1, GW-76S, GW-78S, GW-CA3S, GW-CA4S, PZ-24, PZ-25, and GW-6S, to continuously monitor groundwater elevation proximate to the cap area. Wood E&IS downloaded data from the 10 data loggers, along with data from the barometric pressure data logger deployed in GW-35S. Downloaded data from the loggers are presented in the January 2019 Semi-Annual Status Report.

2.1.5 Cap Inspection

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The temporary cap is composed of ten large and three small scrim reinforced polyethylene sheets of 8 mil thickness. These sheets were factory fabricated with double welded seams from smaller, narrower panels. The seams between the large sheets were field fabricated by folding and sewing the edges of the sheets together with an ultraviolet (UV)-resistant thread. The original temporary cap was installed in 2001 and

consisted of a 6-mil thick sheet. Due to deterioration of the 6-mil sheet, an 8-mil thick cover was installed directly over the 6-mil cover and re-ballasted with sand bags to resist wind uplift.

Since November 2016, Olin on-site personnel have been conducting the cap inspections and integrating the inspections with the maintenance repair activities. Olin has reduced the official inspection frequency from quarterly to semi-annually with informal inspections to continue to ensure that any potential significant issues are addressed in a timely fashion. The semi-annual cap inspection and maintenance field data record is included as **Appendix C** and is summarized in the January 2019 Semi-Annual Status Report (No. 23).



3.0 Plant B monitoring program

The purpose of the Plant B groundwater sampling and analysis program is to monitor groundwater quality at select monitoring wells and conduct gauging activities to determine groundwater elevations and light non-aqueous phase liquid (LNAPL) thickness.

3.1 Scope of Work

The Second Quarter 2018 Plant B Monitoring Program consisted of measuring groundwater levels in 28 monitoring wells within the Plant B area, gauging LNAPL thickness in monitoring wells where LNAPL was observed, and USEPA low stress (low flow) groundwater sampling at monitoring well: GW-16R. Groundwater monitoring wells from the Plant B Monitoring Program are shown on **Figure 2**.

3.1.1 Groundwater Level Measurements and LNAPL Gauging

On May 31, 2018, Olin personnel completed a site reconnaissance of the monitoring well locations in the Plant B Monitoring Program and collected groundwater level measurements and LNAPL thickness measurements. Depth to groundwater was measured in 28 monitoring wells using a water interface probe. For wells with observed LNAPL, LNAPL thickness was measured using an oil/water interface probe. Groundwater level measurements, groundwater elevations, and LNAPL thickness measurements are summarized in **Table 7**.

3.1.2 **Groundwater Sampling**

On May 21, 2018, Olin personnel sampled groundwater from monitoring well GW-16R following the 2010 USEPA low stress (low flow) groundwater sampling method.

Prior to low flow sampling, a Horiba U-52 multi-parameter water quality meter and Hach 2100Q turbidity meter were calibrated according to the instrument manufacturer's specifications using certified calibration solutions.

Groundwater was purged using an adjustable rate peristaltic pump along with dedicated tubing at the sample location. During sampling activities, the purged groundwater was continuously monitored using the Horiba U-52 multi-parameter water quality meter for pH, temperature, SC, DO, and ORP, while turbidity was monitored using the Hach 2100Q turbidity meter. Well purging continued at the sample location until these field parameters stabilized as indicated in Appendix A of the IRSWP. The final low flow purging field parameter measurements are presented in **Table 8**. Field data records for each groundwater monitoring location are attached in **Appendix A**.

Upon groundwater parameter stabilization, groundwater samples were collected by directly filling the laboratory prepared glassware. The samples were placed on ice, and were transferred to TAL of Buffalo, New York, under chain-of-custody for chemical analyses as summarized in **Table 9**. Copies of the chain-of-custody documents are provided in **Appendix B**. Laboratory analytical data will be presented in the January 2019 Semi-Annual Status Report.

Purged groundwater from sampling activities was collected in collapsible plastic containers, transported to the Block House building, adjacent to the Plant B groundwater treatment building, and containerized in a secured 55-gallon drum. Olin characterizes and disposes of that material in accordance with applicable regulations.

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4.0 References

MACTEC Engineering and Consulting, Inc. (MACTEC), August 8, 2008. Final Interim Response Steps Work Plan, Olin Chemical Superfund Site, Wilmington, Massachusetts.

MACTEC, August 14, 2009. Final RI/FS Work Plan, Olin Chemical Superfund Site, Wilmington, Massachusetts.





Tables

Table 1

Groundwater and Surface Water Sampling Locations Slurry Wall/Cap Monitoring Program Second Quarter 2018 Sampling Event Olin Chemical Superfund Site Wilmington, Massachusetts

| Groundwater | Surface Water |
|-------------|---------------|
| GW-10S | ISCO1 |
| GW-24 | ISCO2 |
| GW-25 | ISCO3 |
| GW-26* | PZ-16RRR |
| GW-34SR | PZ-17RRR |
| GW-34D | PZ-18R |
| GW-35S | SD-17 |
| GW-42S** | |
| GW-43SR | |
| GW-76S | |
| GW-78S | |
| GW-79S | |
| GW-201S | |
| GW-202S | |
| GW-202D | |
| GW-CA1 | |
| PZ-16RRR # | |
| PZ-17RRR # | |
| PZ-18R | |
| PZ-24 | |
| PZ-25 | |
| GW-16R ^ | |

Notes:

Bold - DUP/ MS/ MSD collected

* - Well removed for detention basin construction

** - Well destroyed; Sampled MP-2 #13

- Piezometer replaced in South Ditch

^ - Plant B Monitoring Well

Prepared by: CTM 7/23/2018

Table 2 Groundwater Elevations Slurry Wall/Cap Monitoring Program Second Quarter 2018 Sampling Event Olin Chemical Superfund Site Wilmington, Massachusetts

| WELL ID | Reference | Depth to Water | Groundwater | Notes | Date |
|------------------|-----------|----------------|---------------|--------|-----------|
| WEELIB | Elevation | (1, 2) | Elevation (3) | 110100 | Measured |
| I.D. | (ft msl) | (ft) | (feet NGVD) | | |
| GW-10S | 89.79 | 8.32 | 81.47 | TOC | 5/18/2018 |
| GW-24 | 83.43 | 2.12 | 81.31 | | 5/18/2018 |
| GW-25 | 85.97 | 4.80 | 81.17 | | 5/16/2018 |
| GW-26* | 84.93 | * | | * | |
| GW-34D | 90.36 | 7.45 | 82.91 | | 5/17/2018 |
| GW-34SR | 89.13 | 6.14 | 82.99 | | 5/17/2018 |
| GW-35S | 88.51 | 6.85 | 81.66 | | 5/17/2018 |
| GW-39^ | 83.64 | 7.24 | 76.40 | | 5/18/2018 |
| GW-42S** | 84.18 | ** | | ** | |
| GW-43SR | 87.86 | 6.27 | 81.59 | | 5/18/2018 |
| GW-55S | 81.70 | 2.41 | 79.29 | | 5/18/2018 |
| GW-55D | 81.95 | 2.61 | 79.34 | | 5/18/2018 |
| GW-76S | 88.45 | 7.00 | 81.45 | TOC | 5/18/2018 |
| GW-78S | 84.89 | 4.21 | 80.68 | | 5/16/2018 |
| GW-79S | 81.54 | 3.00 | 78.54 | | 5/16/2018 |
| GW-201S | 83.29 | 3.68 | 79.61 | | 5/18/2018 |
| GW-202S | 86.97 | 6.20 | 80.77 | | 5/15/2018 |
| GW-202D | 86.52 | 5.57 | 80.95 | | 5/15/2018 |
| GW-CA1 | 88.01 | 6.42 | 81.59 | | 5/17/2018 |
| PZ-16RRR/IN | *** | 3.25 | | | 5/16/2018 |
| PZ-16RRR/OUT (4) | *** | NM | | NM | |
| PZ-17RRR/IN | *** | 2.08 | | | 5/16/2018 |
| PZ-17RRR/OUT (4) | *** | NM | | NM | |
| PZ-18R/IN | 82.42 | 1.80 | 80.62 | | 5/16/2018 |
| PZ-18R/OUT (4) | 82.42 | NM | | NM | |
| PZ-24 | 89.43 | 8.35 | 81.08 | | 5/15/2018 |
| PZ-25 | 88.90 | 8.06 | 80.84 | | 5/15/2018 |

Notes:

- (1) Measurement from top of PVC. If no PVC, measurement from TOC
- (2) Collected using a Solinst water interface probe
- (3) Groundwater Elevation = Reference Elevation Depth to Water
- (4) Reported elevation of surface water adjacent to piezometer

TOC - Water level measurement taken from Top of Casing

- * Well removed for detention basin construction
- ** Well destroyed during paving
- *** Piezometer replaced in South Ditch. Not surveyed

NGVD - National Geodetic Vertical Datum

msl - mean sea level

ft - feet

NM - not measured

^ - Well heaving

Prepared by: CTM 7/23/2018 Checked by: SAI 7/23/2018

Table 3 Final Field Parameters for Groundwater Sampling Slurry Wall/Cap Monitoring Program Second Quarter 2018 Sampling Event Olin Chemical Superfund Site Wilmington, Massachusetts

| Quarterly Slurry Wall/Cap Monitoring Well Samples | | | | | | Quarterly Slurry Wall/Cap | | | | | | |
|---------------------------------------------------|-----------|-----------|-----------|-----------|-----------|---------------------------|--------------------|-----------|-----------|-----------|--|--|
| | | | | | | | Piezometer Samples | | | | | |
| Location ID | GW-25 | GW-78S | GW-79S | GW-202S | GW-202D | PZ-16RRR | PZ-17RRR | PZ-18R | PZ-24 | PZ-25 | | |
| Date | 5/16/2018 | 5/16/2018 | 5/16/2018 | 5/15/2018 | 5/15/2018 | 5/16/2018 | 5/16/2018 | 5/16/2018 | 5/15/2018 | 5/15/2018 | | |
| Depth to Water (ft) | 5.26 | 4.37 | 3.00 | 6.23 | 5.65 | Dry | Dry | 2.79 | 8.49 | 8.13 | | |
| Temperature (°C) | 11.53 | 11.89 | 12.20 | 12.87 | 13.90 | 14.75 | 15.55 | 13.53 | 14.41 | 13.50 | | |
| Specific Conductivity (mS/cm) | 0.926 | 1.07 | 1.56 | 0.764 | 2.40 | 1.16 | 0.692 | 4.94 | 1.46 | 1.19 | | |
| pH (standard units) | 11.15 | 10.10 | 8.65 | 8.00 | 6.26 | 9.65 | 11.04 | 9.97 | 9.18 | 8.84 | | |
| Dissolved Oxygen (mg/L) | 1.69 | 0.01 | 1.77 | 0.01 | 2.30 | 8.00 | 4.25 | 0.44 | 0.23 | 2.06 | | |
| Turbidity (NTU) | 0.01 | 0.01 | 31.2 | 1.5 | 10.7 | 164 | 139 | 17.9 | 28.1 | 4.7 | | |
| ORP (millivolts) | -115 | -3 | 12 | 126 | 232 | -50 | -160 | -81 | -51 | 28 | | |

| Location ID | GW-10S | GW-24 | GW-34SR | GW-34D | GW-35S | MP-2#13 | GW-43SR | GW-76S | GW-201S | GW-CA-1 |
|-------------------------------|-----------|-----------|-----------|-----------|-----------|------------|-----------|-----------|-----------|-----------|
| Date | 5/18/2018 | 5/18/2018 | 5/17/2018 | 5/17/2018 | 5/17/2018 | 5/18/2018 | 5/18/2018 | 5/18/2018 | 5/18/2018 | 5/17/2018 |
| Depth to Water (ft) | 8.40 | Dry | 6.14 | 7.45 | 6.98 | Multi-port | 6.27 | 7.02 | 3.93 | 6.42 |
| Temperature (°C) | 11.10 | 10.36 | 15.17 | 16.25 | 13.36 | 12.76 | 14.45 | 12.01 | 13.45 | 12.69 |
| Specific Conductivity (mS/cm) | 0.122 | 0.473 | 0.048 | 0.083 | 0.958 | 1.51 | 0.843 | 0.219 | 2.62 | 0.384 |
| pH (standard units) | 6.89 | 7.89 | 7.24 | 7.30 | 10.94 | 6.44 | 6.41 | 7.60 | 7.64 | 8.00 |
| Dissolved Oxygen (mg/L) | 3.87 | 0.46 | 6.04 | 0.38 | 5.95 | 8.91 | 7.41 | 6.39 | 0.01 | 3.91 |
| Turbidity (NTU) | 4.5 | 15.1 | 0.01 | 0.01 | 2.9 | 0.1 | 17.6 | 26.6 | 81 | 0.01 |
| ORP (millivolts) | 249 | 33 | 154 | 101 | -100 | 147 | 220 | 125 | 85 | 59 |

Notes:

ft - feet

mS/cm - milliSiemens per centimeter

mg/L - milligrams per liter

NTU - nephelometric turbidity units

ORP - Oxidation/Reduction Potential

mV - millivolts

Dry = purged dry and sampled upon recovery

Prepared by: CTM 7/23/2018 Checked by: SAI 7/23/2018

Table 4

Groundwater Laboratory Analytical Program Slurry Wall/Cap Monitoring Program Second Quarter 2018 Sampling Event Olin Chemical Superfund Site Wilmington, Massachusetts

| Analyte | Analysis Method | Detection Limit | Units |
|-------------------------------|------------------------------|-----------------|----------|
| Physical/Inorganic Parameters | | | |
| Ammonia-Nitrogen | EPA 350.1 (10-107-06-1-K) | 0.10 | mg/L |
| Chloride | EPA 300.0 | 0.28 | mg/L |
| Specific Conductivity | SM18 2510B | 1.0 | μmhos/cm |
| Sulfate | EPA 300.0 | 0.35 | mg/L |
| Filtered Metals | | | |
| Aluminum, filtered | SW846 6010B | 60 | μg/L |
| Chromium, filtered | SW846 6010B | 1.0 | μg/L |

Prepared by: CTM 7/23/2018

Checked by: SAI 7/23/2018

Notes: mg/L - milligrams per liter μ mhos/cm - micromhos per centimeter μ mhos/cm = μ S/cm (microSiemens per centimeter) 1 μ S/cm = 0.001 mS/cm (milliSiemens per centimeter) μ g/L - micrograms per liter

Table 5

Final Field Parameters for Surface Water Sampling Slurry Wall/Cap Monitoring Program Second Quarter 2018 Sampling Event Olin Chemical Superfund Site Wilmington, Massachusetts

| Surface Water Samples | | | | | | | | | |
|-------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--|--|
| Location ID | ISCO1 | ISCO2 | ISCO3 | PZ-16RRR | PZ-17RRR | PZ-18R | SD-17 | | |
| Date | 5/22/2018 | 5/22/2018 | 5/22/2018 | 5/22/2018 | 5/22/2018 | 5/22/2018 | 5/22/2018 | | |
| | | | | | | | | | |
| Sample Depth of Water (ft) | 0.50 | 0.17 | 0.17 | 0.17 | 0.17 | 0.33 | 0.25 | | |
| | | | | | | | | | |
| Temperature (°C) | 14.51 | 18.12 | 20.39 | 17.07 | 17.30 | 14.99 | 15.41 | | |
| | | | | | | | | | |
| Specific Conductivity (mS/cm) | 0.829 | 0.822 | 0.342 | 0.913 | 0.506 | 0.829 | 0.985 | | |
| | | | | | | | | | |
| pH (standard units) | 9.04 | 7.09 | 5.81 | 7.85 | 9.03 | 9.01 | 8.83 | | |
| | | | | | | | | | |
| Dissolved Oxygen (mg/L) | 2.27 | 5.41 | 8.78 | 9.68 | 7.08 | 4.11 | 10.55 | | |
| | | | | | | | | | |
| Turbidity (NTU) | 0.01 | 88.1 | 13.2 | 3.8 | 14.0 | 8.2 | 1.71 | | |
| | | | | | | | | | |
| ORP (millivolts) | 81 | 108 | 98 | 107 | 83 | 79 | 78 | | |

Prepared by: CTM 7/23/2018

Checked by: SAI 7/23/2018

Notes:

ft - feet

mS/cm - milliSiemens per centimeter

mg/L - milligrams per liter

NTU - nephelometric turbidity units

ORP - Oxidation/Reduction Potential

mV - millivolts

Table 6 Surface Water Analytical Program Slurry Wall/Cap Monitoring Program Second Quarter 2018 Sampling Event Olin Chemical Superfund Site Wilmington, Massachusetts

| Analyte | Analysis Method | Detection Limit | Units |
|-------------------------------|--------------------|-----------------|----------|
| Physical/Inorganic Parameters | | | |
| Ammonia-Nitrogen | EPA 350.1 | 0.1 | mg/L |
| | (10-107-06-1-K) | | J |
| Nitrate | EPA 300.0 | 0.02 | mg/L |
| Nitrite | EPA 300.0 | 0.02 | mg/L |
| Chloride | EPA 300.0 | 0.28 | mg/L |
| Specific Conductivity | SM18 2510B | 1.0 | μmhos/cm |
| Sulfate | EPA 300.0 | 0.34 | mg/L |
| Total Metals | | | |
| Aluminum, Total | SW846 6010B | 60 | μg/L |
| Chromium, Total | SW846 6010B | 1.0 | μg/L |
| Sodium, Total | SW846 6010B | 320 | μg/L |
| Filtered Metals | | | |
| Aluminum, Filtered | SW846 6010B | 60 | μg/L |
| Chromium, Filtered | SW846 6010B | 1.0 | μg/L |
| Sodium, Filtered | SW846 6010B | 320 | μg/L |

Prepared by: CTM 7/23/2018

Checked by: SAI 7/23/2018

Notes: mg/L - milligrams per liter $\mu mhos/cm$ - micromhos per centimeter $\mu mhos/cm = \mu S/cm$ (microSiemens per centimeter) 1 $\mu S/cm = 0.001$ mS/cm (milliSiemens per centimeter)

 $\mu g/L$ - micrograms per liter

Table 7 Groundwater Elevations Plant B Monitoring Program Second Quarter 2018 Sampling Event Olin Chemical Superfund Site Wilmington, Massachusetts

| WELLID | Reference | Depth to | Depth to | Product Thickness | Groundwater | Date |
|---------|---------------|-----------|-------------|-------------------|---------------|-----------|
| WELL ID | Elevation (1) | Water (2) | Product (3) | (4) | Elevation (5) | Measured |
| I.D. | (ft msl) | (ft) | (ft) | (ft) | (feet NGVD) | |
| B-2 | 90.48 | 11.48 | NPD | NA | 79.00 | 5/31/2018 |
| B-3 | 90.32 | 10.86 | NPD | NA | 79.46 | 5/31/2018 |
| B-5R | 91.38 | 10.82 | NPD | NA | 80.56 | 5/31/2018 |
| B-7A | 88.81 | 7.07 | NPD | NA | 81.74 | 5/31/2018 |
| B-17 | 91.55 | 8.24 | NPD | NA | 83.31 | 5/31/2018 |
| GW-13 | 90.57 | 11.14 | NPD | NA | 79.43 | 5/31/2018 |
| GW-14 | 88.70 | 8.44 | NPD | NA | 80.26 | 5/31/2018 |
| GW-15 | 90.01 | 7.40 | NPD | NA | 82.61 | 5/31/2018 |
| GW-16R | 92.46 | 9.71 | NPD | NA | 82.75 | 5/31/2018 |
| GW-23 | 91.04 | 11.84 | 11.07 | 0.77 | 79.93 | 5/31/2018 |
| GW-52S | 87.95 | 7.64 | NPD | NA | 80.31 | 5/31/2018 |
| GW-100 | 90.15 | 11.53 | NPD | NA | 78.62 | 5/31/2018 |
| GW-101 | 90.14 | 11.50 | NPD | NA | 78.64 | 5/31/2018 |
| GW-102 | 89.00 | 10.29 | NPD | NA | 78.71 | 5/31/2018 |
| IW-1 | 90.71 | 11.41 | NPD | NA | 79.30 | 5/31/2018 |
| IW-2 | 90.53 | 11.53 | NPD | NA | 79.00 | 5/31/2018 |
| IW-3 | 90.76 | 11.66 | NPD | NA | 79.10 | 5/31/2018 |
| IW-6 | 89.15 | 10.74 | NPD | NA | 78.41 | 5/31/2018 |
| IW-7 | 90.10 | 11.66 | NPD | NA | 78.44 | 5/31/2018 |
| IW-8 | 89.94 | 11.39 | NPD | NA | 78.55 | 5/31/2018 |
| IW-9 | 89.78 | 11.05 | NPD | NA | 78.73 | 5/31/2018 |
| IW-10 | 90.43 | 11.54 | NPD | NA | 78.89 | 5/31/2018 |
| IW-11 | 89.92 | 14.47 | 14.08 | 0.39 | 75.82 | 5/31/2018 |
| IW-12 | 90.31 | 13.59 | NPD | NA | 76.72 | 5/31/2018 |
| IW-13 | 89.90 | 19.66 | NPD | NA | 70.24 | 5/31/2018 |
| PID | 89.97 | 11.43 | NPD | NA | 78.54 | 5/31/2018 |
| P5 | 90.45 | 11.54 | 11.50 | 0.04 | 78.95 | 5/31/2018 |
| 12-IN | 89.84 | 10.77 | NPD | NA | 79.07 | 5/31/2018 |

Notes:

(1) - Reference elevations surveyed 11/97. New TOC survey by Dana Perkins 4-5/98

Prepared by: CTM 7/23/2018 Checked by: SAI 7/23/2018

(2) - Top of PVC. If no PVC, measurement from top of steel casing

(3) - Collected using a Solinst water interface probe or Geotech oil/water interface probe

- (4) If sheen is noted, a product thickness of 0.01 feet will be used to calculate the groundwater elevation
- (5) Groundwater Elevation = Reference Elevation (Depth to Water (Product Thickness x 0.95))

TOC - Top of Casing

NPD - No Product Detected

NA - Not Applicable

NGVD - National Geodetic Vertical Datum

msl - mean sea level

ft - feet

East Ditch - No sheen noted; Observed OK

Table 8

Final Field Parameters for Groundwater Sampling Plant B Monitoring Program Second Quarter 2018 Sampling Event Olin Chemical Superfund Site Wilmington, Massachusetts

| Plant B Monitoring Well Samples | |
|--------------------------------------|-----------|
| Location | GW-16R |
| Date | 5/21/2018 |
| | |
| Depth to Water (ft) | 11.14 |
| | |
| Temperature (°C) | 15.71 |
| | |
| Specific Conductivity (mS/cm) | 0.164 |
| | |
| pH (standard units) | 9.37 |
| | |
| Dissolved oxygen (mg/L) | 0.01 |
| T (AITLI) | 000 |
| Turbidity (NTU) | 228 |
| Oxidation Reduction Potential (mV) | -4 |
| Oxidation neduction Potential (IIIV) | -4 |

Prepared by: CTM 7/23/2018

Checked by: SAI 7/23/2018

Notes:

ft - feet

mS/cm - milliSiemens per centimeter

mg/L - milligrams per liter

NTU - nephelometric turbidity units

ORP - Oxidation/Reduction Potential

mV - millivolts

Table 9 Groundwater Laboratory Analytical Program Plant B Monitoring Program Second Quarter 2018 Sampling Event Olin Chemical Superfund Site Wilmington, Massachusetts

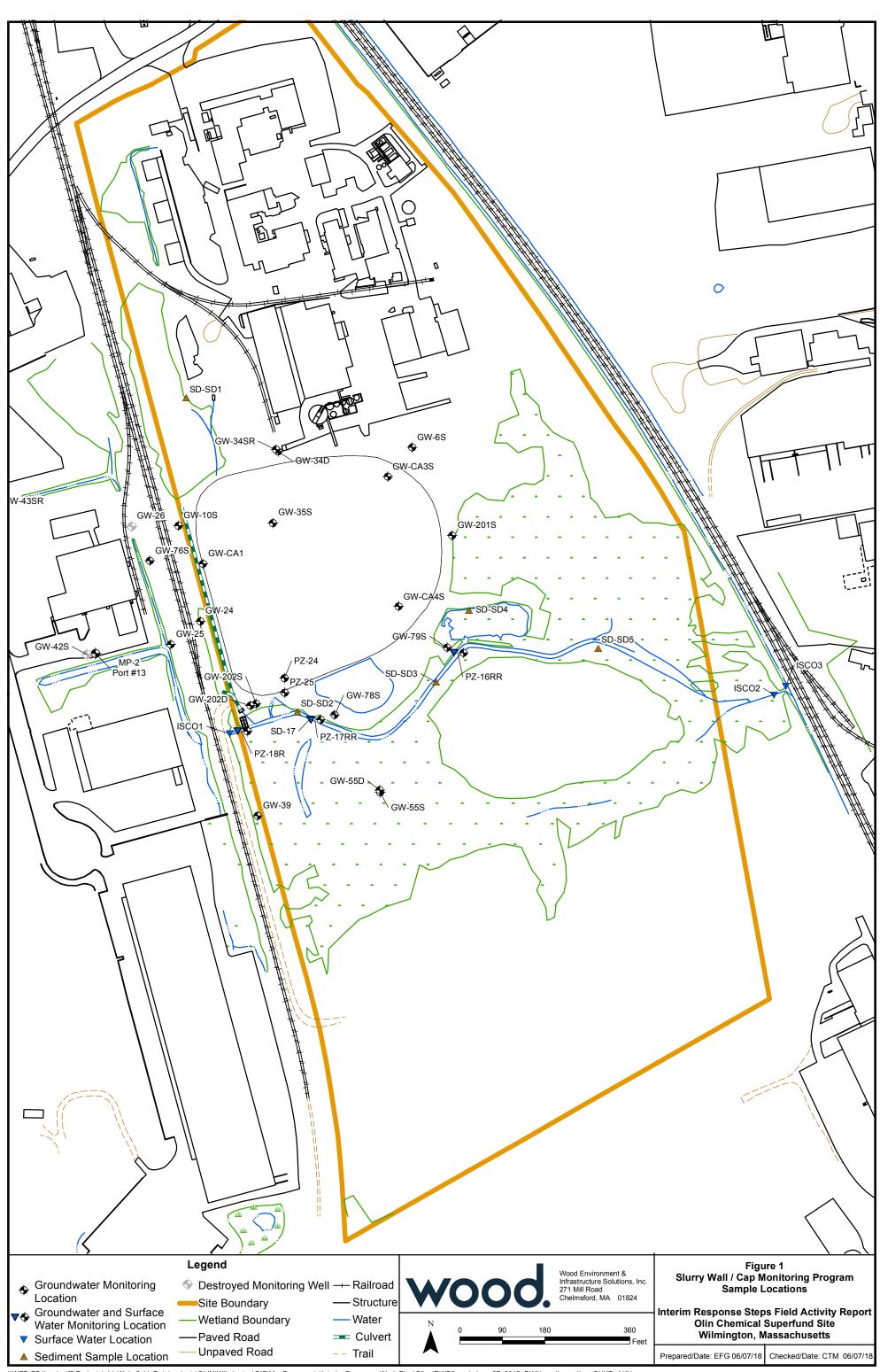
| Analyte | Analysis Method | Detection Limit | Units |
|---------------------------------------|--------------------|-----------------|-------|
| Volatile organic compounds (VOC) | | | |
| 2,4,4-Trimethyl-1-pentene | SW846 8260B | 0.40 | μg/L |
| 2,4,4-Trimethyl-2-pentene | SW846 8260B | 0.43 | μg/L |
| Semivolatile organic compounds (SVOC) | | | |
| N-nitrosodiphenylamine | SW846 8270C | 0.07 | μg/L |
| bis(2-ethylhexyl)phthalate | SW846 8270C | 0.44 | μg/L |
| Volatile Petroleum Hydrocarbons (VPH) | | | |
| C5-C8 Aliphatics | MA VPH | 1.5 | μg/L |
| C5-C8 Aliphatics, Unadjusted | MA VPH | 1.5 | μg/L |
| C9-C12 Aliphatics | MA VPH | 1.5 | μg/L |
| C9-C12 Aliphatics, Unadjusted | MA VPH | 1.5 | μg/L |
| C9-C10 Aromatics | MA VPH | 0.50 | μg/L |
| Methyl-tert-butyl-ether (MTBE) | MA VPH | 0.25 | μg/L |
| Benzene | MA VPH | 0.25 | μg/L |
| Ethylbenzene | MA VPH | 0.25 | μg/L |
| m,p-Xylene | MA VPH | 0.50 | μg/L |
| o-Xylene | MA VPH | 0.25 | μg/L |
| Toluene | MA VPH | 0.25 | μg/L |
| Naphthalene | MA VPH | 0.25 | μg/L |
| Physical/Inorganic Parameters | | | |
| Ammonia-Nitrogen | EPA 350.1 | 0.10 | ma/l |
| Ammonia-Nitrogen | (10-107-06-1-K) | 0.10 | mg/L |
| рН | SM 4500 H+ B | 0.10 | SU |
| Filtered Metals | | | |
| Iron, Filtered | SW846 6010B | 19 | μg/L |

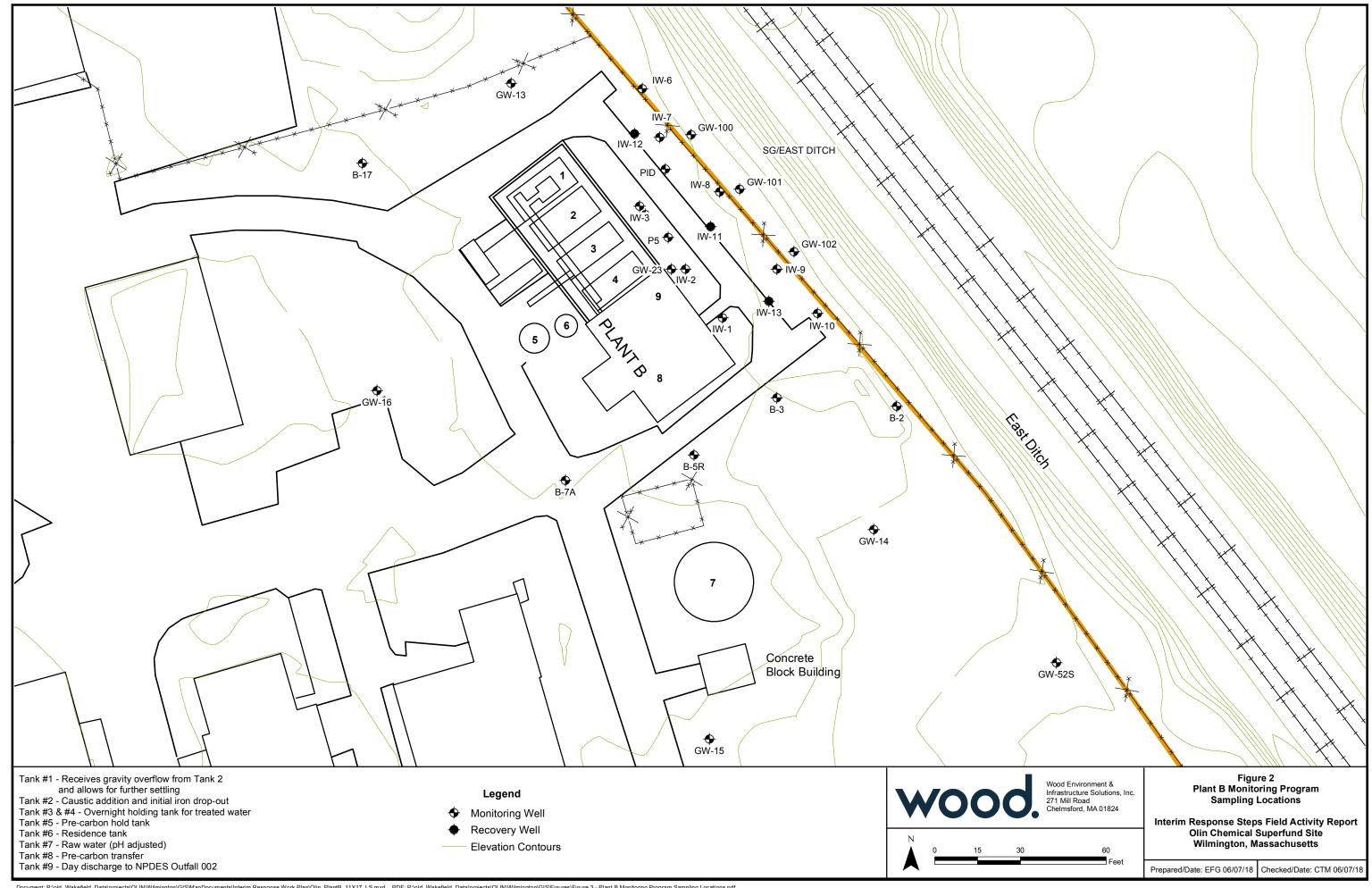
Notes: $\mu g/L \text{ - micrograms per liter}$ mg/L - milligrams per liter SU - standard units

Prepared by: CTM 7/23/2018 Checked by: SAI 7/23/2018

wood.

Figures





wood.

Appendix A

Field Data Records and Field Instrument Calibration Records

| | | RI | ELD INSTI | RUMEN | NTATIO | N CALIBRA | TION RECOR | D | |
|---------------------------|------------------|-----------------------------|-----------------------|----------------|-------------------|---------------------------------------|------------------------------------------------|----------------|------------------------------------|
| PROJECT NAM | ME: | Olin Che | emical Superfund | Site - 2nd | Quarter Samp | ling | TASK NO: | | DATE: 5/15/2018 |
| PROJECT NUM | MBER: | | 61 | 07180016 | | | AMEC CREW: | | Olin - BEG |
| PROJECT LOC | CATION: | | 51 Eames | s St, Wilmin | ngton, MA | | SAMPLER NAME: | | Brian Guichard |
| WEATHER CO | NDITIONS (A | M): | | | | | SAMPLER SIGNAT | URE: | Field Form w/ Signature on File |
| WEATHER CO | NDITIONS (P | M): | | | | | CHECKED BY: | CTM | DATE: 7/25/2018 |
| MULTI-PARA | METER WAT | ER OUAL | ITY METER | | | | | | |
| METER TYPE | Horiba | | | AM CAL | IBRATION | | PM CA | LIBRATIO | N CHECK |
| MODEL NO. | U-52 | | Start Time: | | End Time: | | Start Time: | | d Time: |
| UNIT ID NO. | Olin | _ | 2 | | | | 2 1112 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | | |
| | | Units | Standard Value | Me Val | | eceptance Criteria (AM) | Standard Value | Meter Value | *Acceptance Criteria (PM) |
| | pH (4) | SU | 4.0 | 4.0 |)1 +/- | 0.1 pH Units | | | |
| | pH (7) | SU | 7.0 | | +/- | 0.1 pH Units | 4.0 | 4.02 | +/- 0.3 pH Units |
| | pH (10) | SU | 10.0 | - | +/- | 0.1 pH Units | | | |
| | Redox | +/- mV | | 29 | | 10 mV | | 291 | +/- 10 mV |
| | Conductivity | mS/cm | 4.49 | 4.5 | 52 +/- | 3% of standard | 4.49 | 4.48 | +/- 5% of standard |
| D | O (saturated) | % | | - | +/- | 2% of standard | | | • |
| Б | O (saturated) n | ng/L ¹ (see Char | t 1) _ | 8.9 | 94 +/- | 0.2 mg/L | - | 9.45 | 107 7 6 . 1 1 |
| | DO (<0.1) | mg/L | <0.1 | | | .5 mg/L | | | +/- 0.5 mg/L of standard |
| | Temperature | °C | | 22. | | g. 2 | | 19.66 | |
| | Baro. Press. | mmHg | | | | | | | - |
| TURBIDITY N | | | | | Standard | Meter | Standard | Meter | * A coontones Critorio |
| METER TYPE | Hach | | | Units | Standard Value | Value | Value | Value | *Acceptance Criteria (PM) |
| MODEL NO. | 2100Q | | | | value | v anuc | Value | value | (1111) |
| UNIT ID NO. | Olin | | Standard | NTU | 10 | 10.0 | 10 | 10.1 | +/- 5% of standard |
| | | | Standard | NTU | 20 | 20.0 | 20 | 20.0 | - |
| | | | Standard | NTU | 100 | 101 | 100 | 101 | • |
| | | | Standard | NTU | 800 | 797 | 800 | 803 | • |
| PHOTOIONIZ | ATION DETE | ECTOR | | | | | | | - |
| METER TYPE MODEL NO. | | | Background | ppmv | <0.1 | | <0.1 | | within 5 ppmv of BG |
| UNIT ID NO. | | | Span Gas | ppmv | 100 | | 100 | | +/- 10% of standard |
| O ₂ -LEL 4 GAS | METER | | | | | | | | |
| METER TYPE | | | Methane | % | 50 | | 50 | | +/- 10% of standard |
| MODEL NO. | - | _ | O_2 | % | 20.9 | | 20.9 | | +/- 10% of standard |
| UNIT ID NO. | - | | H_2S | ppmv | 25 | | 25 | | +/- 10% of standard |
| | - | _ | CO | ppmv | 50 | | 50 | | +/- 10% of standard |
| OTHER METI | F D | | | II | | | | | |
| METER TYPE | LK. | | | | | | | | |
| MODEL NO. | - | | | | - | <u> </u> | | | See Notes Below for |
| UNIT ID NO. | - | | | | - | <u> </u> | | | - Additional |
| ONIT ID NO. | | | | | | | | | Information |
| - T | . 12 . 1 . 2 | | G : | 1.0 1 0 | d . 1° | sted above (see notes). | | | - |
| == | | | • | | | · · · · · · · · · · · · · · · · · · · | | | |
| | | d within the Ac | cceptance Criteria sp | ecified for ea | cn of the parame | ters listed above**. | CIC LILAN | | T. D. |
| MATERIALS | RECORD | | | | | pH (4) | Cal. Standard Lot Nu Horiba Auto-Cal Soluti | | Exp. Date Horiba Auto-Cal Solution |
| Deionized Water | Cource | | | | | pH (4) pH (7) | | ion | |
| Lot#/Date | | | | | | pH (10) | | | |
| Trip Blank Sour | | Ĭ | ab | | | ORP | | | |
| Sample Preserva | | | ab | | | Conductivity | | | |
| Disposable Filter | | | Pine 0.45µm | | | 10 Turb. Stan. | Olin Cal Set | | Olin Cal Set |
| Calibration Fluid | | ource: | | | | 20 Turb. Stan. | II . | | " |
| | on Fluid (<0.1 i | | | | | 100 Turb. Stan. | " | | ** |
| - Other | ` | - · - | | | | 800 Turb. Stan. | н | | " |
| - Other | | | | | | PID Span Gas | | | |
| - Other | | | | | | O ₂ -LEL Span Gas | | | |
| | | | | | | DO | | | |
| NOTES: | | | | | | _ | | | |

wood.

^{* =} Unless otherwise noted, calibration procedures and acceptance criteria are in general accordance with USEPA Region 1 SOPs for Field Instrument Calibration (EQASOP-Field Calibration) and Low Stress Purging and Sampling (EQASOP-GW001), each dated 1/19/2010. Additional acceptance criteria obtained from instrument specific manufacturer recommendations.

^{** =} If meter reading is not within acceptance criteria, clean/replace probe and re-calibrate, or use calibrated back-up meter if available. If project requirements necessitate use of the instrument, clearly document any deviations from acceptance criteria on all data sheets and log book entries.

| | | | JCTURE SOLU W FLOW G | TIONS, INC. ROUNDWAT | TER SAN | MPLING | | | | | |
|---------------------------------------------------------------------------------------------------------------|---------------------------------------|-------------------------------------|----------------------------------------------------|-----------------------------------------|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------------------------|--------------------------------------|----------------------------------------------------------|-----------------|
| PROJECT | | | SITE, WILMINGTO | | WEL | | GW-10S | | 1 | ROUND |) NO. 2 |
| SAMPLE ID | | OC-GW-10 | | | SITE T | | Superfund | |] | DATE | 5/18/2018 |
| TIME | START | 9:30 END | | | JOB NUMBI | | 6107180016 | |] | BOTTLE TIME | 9:55 |
| | EVEL / PUMP S | | | EMENT POINT | 002 11011121 | | 0.07.000.0 | | 1 | 501122111112 | 0.00 |
| QC SAM | | N/A | TOF X TOF | OF WELL RISER OF PROTECTIVE (HER | CASING | PROTECTIVE CASING STIC (FROM GRO | CKUP | FT. | PROTE CASING DIFFER | 3 / WELL | \ FT. |
| INITIAL DE TO WA | TER | 8.32 F1 | T. WELL DI | 9.12 | FT. | PID AMBIENT AIF | R N/A | PPM | WELL DIAMET | TER 1.5 | IN. |
| FINAL DE TO WA | TER | 8.40 F1 | T. SCREEN LENGTH | | FT. | PID WELL MOUTH | N/A | WELL N/A PPM INTEGRITY: | | | NO N/A |
| DRAWDO VOLU (final - i | JME < | 0.01 GA h} or x 0.65 {4-inch | | OF DRAWDOWN VO | | PRESSURE TO PUMP | N/A | PSI |] | CAP X CASING X LOCKED X COLLAR X | $\equiv \equiv$ |
| TOTAL \ PUR((purge) | GED | 1.17 GA minute) x time du | L. Iration (minutes) x | <0.01 0.00026 gal/ml) | | REFILL TIMER SETTING | N/A | SEC. | DISCHA TIMER SETTIN | N/A | SEC. |
| PURGE D | ATA | | | | | | | | | | |
| TIME | DEPTH TO WATER (ft.) (0.3 ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. COND. (mS/cm) (3%) | pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | COMN | MENTS |
| 9:35 | 8.40 | 180 | 12.12 | 0.160 | 7.01 | 7.00 | 15.8 | 208 | ~ 9 ft. | | |
| 9:40 | 8.40 | 180 | 11.90 | 0.133 | 6.84 | 4.11 | 7.2 | 235 | | | |
| 9:45 9:50 | 8.40 8.40 | 180 180 | 11.19 11.11 | 0.122 0.121 | 6.84 | 3.90 3.85 | 4.9 4.7 | 245 249 | | | |
| 9:55 | 8.40 | 180 | 11.10 | 0.122 | 6.89 | 3.87 | 4.5 | 249 | | | |
| | Collect | Sample | | | | | | | | | |
| | | | | | | | | | | | |
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| | | | | | | | | | | | |
| FOLUPME | NT DOCUMEN | TATION | | | | <u> </u> | | | <u> </u> | | |
| TYPE C | DF PUMP ED BLADDER MCO BLADDER EOPUMP | | TYPE OF TUBING TEFLON OR HIGH DENSI X LDPE (Dedica | TEFLON LINED TY POLYETHYLENE | <u> </u> | POL | F PUMP MATERIAL LYVINYL CHLORIDE UNLESS STEEL CON (Dedicated) | | | TYPE OF BLADI TEFLON OTHER | DER MATERIAL |
| ANALYTIC To Be Collected | CAL PARAMET | ERS | MET NUM | | | ESERVATION THOD | VOLUME REQUIRED | | SAMPLE COLLECTED | <u> </u> | |
| SVC VPI Dis pH X Am X Chl X Sul X Spe | X Ammonia-Nitrogen 10-107-06-1 | | | | HCI 4 D HCI HNI 4 D H2S 4 D 4 D 4 D | L / 4 DEG. C IEG. C L / 4 DEG. C O3 / 4 DEG. C IEG. C SO4 / 4 DEG. C IEG. C IEG. C IEG. C O3 / 4 DEG. C | 3 X 40 mL 2 X 1 L AG 3 X 40 mL 1 X 500 mL 1 X 500 mL C 1 X 250 mL 1 X 500 mL 1 X 500 mL 1 X 500 mL | | VOI SVC VPF Dis. pH X Am X Chl X Sul | Cs OCs H H nonia-Nitrogen oride fate ecific Conductivity | |
| PURGE O | BSERVATIONS | | NUMBER OF GAL | LONS | | LOCATION | SKETCH | | | | |
| CONTAINERIZED YES NO GENERATED ~ 1.17 gal. NOTES Chloride and Sulfate analysis collected in one 500mL bottle | | | | al. | Prepared | by: BEG by: SAI by: CTM | | | W | ood. | |
| SIGNATURE | E: Fiel | d Form w/ Signa | ature on File | | | JJUNGU | -y- = ···· | | | | |

| | | | UCTURE SOLU | ITIONS, INC. | TER SAI | MPLING | | | | | | |
|-----------------------------------------------|---------------------------------------------------|-------------------------------------|------------------------------------|-------------------------------------------|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------------|----------------------------------------------------------------------|-----------------|--|
| PROJECT | | | SITE, WILMINGTO | | WEL | | GW-24 | | 1 | ROUND | NO. 2 | |
| SAMPLE ID | | OC-GW-24 | | | SITE T | | Superfund | | | | 5/18/2018 | |
| TIME | START | 10:50 END | 11:15 | | JOB NUMB | | 6107180016 | |] | BOTTLE TIME | 11:05 | |
| WATER L | EVEL / PUMP S | SETTINGS | | REMENT POINT | | | | | • | | | |
| QC SAM COLLEC | MPLE CTED ID | N/A | TO | P OF WELL RISER P OF PROTECTIVE HER | CASING | PROTECTIV CASING STI (FROM GRO | CKUP | FT. | PROTE CASING DIFFER | 3 / WELL | FT. | |
| INITIAL DE TO WA | TER | 2.12 F | T. WELL D | EPTH ~ 11.9 | FT. | PID AMBIENT AII | R N/A | PPM | WELL DIAMETER 1.5 IN. | | | |
| FINAL DE TO WA | TER | Dry F | T. SCREEI LENGTH | | N/A FT. PID WELL N/A | | | PPM | WELL YES NO NA | | | |
| DRAWDO VOLU (final - i | JME | N/A GA h} or x 0.65 {4-inc | | OF DRAWDOWN V | | PRESSURE TO PUMP | N/A | PSI |] | CASING X CASING X COLLAR X X X X X X X X X | $\equiv \equiv$ | |
| TOTAL \ PUR((purge i | GED | 0.89 GA | AL. Iration (minutes) x | N/A 0.00026 gal/ml) | | REFILL TIMER SETTING | N/A | SEC. | DISCHA TIMER SETTIN | N/A | SEC. | |
| PURGE D | ATA | | | | | | | | | | | |
| TIME | DEPTH TO WATER (ft.) (0.3 ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. COND. (mS/cm) (3%) | pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | COMN | 1ENTS | |
| 10:55 | | | 10.36 | 0.473 | 7.89 | 0.46 | 15.1 | 33 | ~ 11 ft. | | | |
| 11.05 | | Well Dry | Sample | Recharge | | | | | | | | |
| 11:05 | Collect | Sample | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
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| | | | | | | | | | | | | |
| TYPE C | NT DOCUMEN' DE PUMP ED BLADDER MCO BLADDER EOPUMP | | TYPE OF TUBING TEFLON OR HIGH DENS | TEFLON LINED TY POLYETHYLEN | E | PO STA | F PUMP MATERIAL LYVINYL CHLORIDE AINLESS STEEL ICON (Dedicated) | | | TYPE OF BLADE TEFLON OTHER | DER MATERIAL | |
| ANALYTIC To Be Collected | CAL PARAMET | ERS | | THOD MBER | | ESERVATION | VOLUME REQUIRED | | SAMPLE COLLECTED |) | | |
| SVC VPH Diss pH X Am X Chl X Sul X Spe X Diss | NUMBER | | | | HC 4 E HC HN 4 E 4 E 4 E 4 E | EL / 4 DEG. C DEG. C L / 4 DEG. C 103 / 4 DEG. (DEG. C SO4 / 4 DEG. DEG. C DEG. C DEG. C | 3 X 40 mL 2 X 1 L AG 3 X 40 mL 1 X 500 mL | | VOI SVC VPF Dis. pH X Amm X Chl X Sul | Cs OCs H Te Indicate the control of the conductivity | | |
| PURGE WA | | _ | NUMBER OF GAI | | al | LOCATION | ISKETCH | | | | | |
| NOTES | Well went dry; sample recharge | | | | <u>idi.</u> | Sampled by: BEG Prepared by: SAI Checked by: CTM | | | | W | ood. | |
| SIGNATURE | ≘: Fiel | ld Form w/ Signa | ature on File | | | | | | | | | |

| | | | UCTURE SOLU W FLOW GI | - | TER SAI | MPLING | | | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------------------------------------|-----------------------------------------|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|-------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------|--------------|
| PROJECT | OLIN CHEMIC | AL SUPERFUND | SITE, WILMINGTO | N, MA | WE | LL ID | GW-25 | |] | ROUND | NO. 2 |
| SAMPLE ID | | OC-GW-2 | 5 | | SITE T | TYPE | Superfund | | | DATE | 5/16/2018 |
| TIME | START | 7:35 END | 8:27 | | JOB NUMB | ER | 6107180016 | |] | BOTTLE TIME | 8:15 |
| QC SAN | EVEL / PUMP S | SETTINGS N/A | X TOF | EMENT POINT OF WELL RISER OF PROTECTIVE | | PROTECTIVE CASING STIC (FROM GRO | CKUP | FT. | PROTEC CASING DIFFERE | / WELL | \ FT. |
| INITIAL DEI TO WA | | 4.80 F | T. WELL DE | EPTH ~ 12.35 | FT. | PID AMBIENT AIF | R N/A | PPM | WELL DIAMETE | ER 1.5 | IN. |
| FINAL DE | | 5.26 F | T. SCREEN LENGTH | | FT. | PID WELL MOUTH | N/A | PPM | WELL | YES | NO N/A |
| VOLU | DRAWDOWN VOLUME 0.04 GAL. RATIO OF DRAWDOW (final - initial x 0.16 {2-inch} or x 0.65 {4-inch}) TO TOTAL VOLUME | | | | | PRESSURE TO PUMP | N/A | PSI |] | TY: CAP X CASING X LOCKED X COLLAR X | |
| PURG | TOTAL VOL. PURGED 1.46 GAL. (purge rate (milliliters per minute) x time duration (minutes) x 0.00026 gal/ml) | | | | | REFILL TIMER SETTING | N/A | SEC. | DISCHAF TIMER SETTING | N/A | SEC. |
| PURGE D | ATA | | | | | | | | | | |
| TIME | DEPTH TO WATER (ft.) (0.3 ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. COND. (mS/cm) (3%) | pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | COMN | MENTS |
| 7:40 | 5.11 | 140 | 14.06 | 0.943 | 7.67 | 2.46 | 0.01 | 56 | ~ 11 ft. | | |
| 7:45 | 5.23 | 140 | 12.78 | 0.972 | 9.43 | 1.29 | 0.01 | -93 | | | |
| 7:50 7:55 | 5.24 5.26 | 140 140 | 12.42 11.94 | 0.961 0.943 | 9.85 | 1.50 1.79 | 0.01 | -113 -129 | | | |
| 8:00 | 5.26 | 140 | 11.77 | 0.932 | 10.99 | 1.81 | 0.01 | -129 | | | |
| 8:05 | 5.26 | 140 | 11.69 | 0.927 | 11.22 | 1.74 | 0.01 | -124 | | | |
| 8:10 | 5.26 | 140 | 11.56 | 0.926 | 11.19 | 1.69 | 0.01 | -118 | | | |
| 8:15 | 5.26 Collect | 140 Sample | 11.53 | 0.926 | 11.15 | 1.69 | 0.01 | -115 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| TYPE C | NT DOCUMEN' OF PUMP ED BLADDER MCO BLADDER EOPUMP | | TYPE OF TUBING TEFLON OR HIGH DENSIT X LDPE (Dedica | Y POLYETHYLEN | IE | POI | F PUMP MATERIAL LYVINYL CHLORIDE NINLESS STEEL CON (Dedicated) | <u> </u> | | TYPE OF BLADI | DER MATERIAL |
| ANALYTIC To Be Collected | CAL PARAMET | ERS | MET NUM | | | RESERVATION ETHOD | VOLUME REQUIRED | <u>)</u> | SAMPLE COLLECTED | | |
| VOCs: Trimethylpentenes 8260 B SVOCs: NDPA and BEHP 8270 C VPH MA VPH Dissolved Fe DIS. 6010B pH SM 4500 H+B X Ammonia-Nitrogen 10-107-06-1 X Chloride 300.0 X Sulfate 300.0 X Specific Conductivity SM 2510B X Dissolved Al, Cr DIS. 6010B | | | | | 4 [HO HN 4 [H2 4 [4 [| CL / 4 DEG. C DEG. C CL / 4 DEG. C IO3 / 4 DEG. C DEG. C SO4 / 4 DEG. DEG. C DEG. C DEG. C JOS / 4 DEG. C | 1 X 500 mL C 1 X 250 mL 1 X 125 mL 1 X 125 mL 1 X 125 mL | | X Chlo | Cs Fe nonia-Nitrogen ride ste ste conductivity | |
| PURGE WA | | _ | NUMBER OF GAL | | | LOCATION | SKETCH | | | | |
| NOTES Chloride and Sulfate analysis collected in one 500mL bottle SIGNATURE: Field Form w/ Signature on File | | | | | gal. | Prepared | l by: BEG I by: SAI l by: CTM | | | W | ood. |

| | | | & INFRASTRI ORD - LO | | | • | TER SA | MPLING | | | | | | | | |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------------------------|--------------------------------------------------|--------------------------------------------------|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------|-------------------------------|-----------------------------------------------------|----------------------------|-------------|-----------------|-------------|
| PROJECT | OLIN CF | HEMICAL | _ SUPERFUND S | SITE, WILMING | TON, MA | | WEI | LL ID | GW-3 | 4SR | | | 1 | ROUND N | 0. 2 | 1 |
| SAMPLE ID | | | OC-GW-34S | SR | | ļ | SITE T | | Super | | | j | DATE | | /17/2018 |] |
| TIME | START | | 10:05 END | 0 10:40 |) | | JOB NUMB | ER | 610718 | 30016 | | | BOTTLE TIM | 1E | 10:30 |] |
| WATER LI | | UMP SI | ETTINGS | | UREMENT | | | | _ | <u>-</u> ' | _ | | | | | |
| | CTED ID | | N/A | T | | ELL RISER ROTECTIVE (| CASING | PROTECTIVE CASING STIC (FROM GRO | CKUP | | FT. | PROTE(CASING DIFFER | i / WELL | N/A | FT. | |
| TO WA | TER | 6 | i.14 F | T. WELL (TOR) | DEPTH [| ~ 17.04 | FT. | PID AMBIENT AIR | R N | N/A | PPM | WELL DIAMET | ER | 2 | IN. | |
| TO WA | TER | 6 | 5.14 F | T. SCREE | | 10 | FT. | PID WELL MOUTH | | N/A | PPM | WELL INTEGR | | YES X | NO N/A | |
| DRAWDO VOLU (final - ir | JME | | 0.01 GA } or x 0.65 {4-inc | | | AWDOWN VO | | PRESSURE TO PUMP | N | N/A | PSI | | CASING LOCKED COLLAR | X X X | $\equiv \equiv$ | - - - |
| TOTAL V PURO (purge r | GED | | .17 GA | | | c0.01 6 gal/ml) | | REFILL TIMER SETTING | N | N/A | SEC. | DISCHA TIMER SETTING | | N/A | SEC. | |
| PURGE D | ATA | | | | | | | | | | | | | | | |
| TIME | DEPTH WATER (0.3 f | R (ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | (m | C. COND. nS/cm) (3%) | pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDI' (NTU) (10%) (> | | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | | COMME | NTS | |
| 10:10 | 6.1 | | 180 | 15.81 | |).050 | 7.47 | 9.91 | 0.01 | | 127 | ~ 15 ft. | | | | |
| 10:15 | 6.1 | | 180 | 16.16 | | 0.049 | 7.45 | 6.90 | 0.01 | | 149 | | | | | |
| 10:20 10:25 | 6.1 | | 180 180 | 15.42 15.29 | | 0.049 | 7.31 7.25 | 6.15 6.10 | 0.01 | | 155 154 | | | | | |
| 10:30 | 6.1 | | 180 | 15.17 | |).048 | 7.24 | 6.04 | 0.01 | | 154 | | | | | _ |
| | С | Collect Sample | | Ţ | | | | | | | | | | | | |
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| EQUIPMEN | NT DOCI | IIMENT | ATION | | | | | | | | | | | | | |
| TYPE O | DF PUMP ED BLADDI MCO BLAD EOPUMP | ER | | TYPE OF TUBI TEFLON (X HIGH DEN LDPE (Den | OR TEFLO | | E | POL STA | F PUMP MATI LYVINYL CHL INLESS STE CON (Dedica | ORIDE EL | | | TYPE OF | LON | R MATERIAL | |
| ANALYTIC To Be Collected | | AMETE | RS | | ETHOD JMBER | | | RESERVATION ETHOD | VOL <u>REQ</u> | UME UIRED | | SAMPLE COLLECTED | <u>)</u> | | | |
| SVC VPH Diss pH X Am X Chl X Sull X Spe X Diss | VOCs: Trimethylpentenes 8260 B SVOCs: NDPA and BEHP 8270 C VPH MA VPH Dissolved Fe DIS. 6010B | | | | В | 4 D HC HN 4 D H2: 4 D 4 D 4 D | CL / 4 DEG. C DEG. C CL / 4 DEG. C JO3 / 4 DEG. C DEG. C DEG. C DEG. C DEG. C DEG. C JOS / 4 DEG. C | 2 X 1 3 X 4 1 X 5 1 X 5 1 X 5 1 X 5 1 X 5 1 X 5 1 X 5 1 X 5 1 X 5 | 40 mL I L AG 40 mL 500 mL 500 mL 500 mL 500 mL 500 mL 500 mL | | X Chlo | OCs I Fe monia-Nitroger oride fate ecific Conductiv | | | | |
| PURGE WA CONTAINER | TER RIZED | YES | NO | NUMBER OF G GENERATED | - | ~ 1.17 ga | <u>.l.</u> | LOCATION | SKETCH | | | | | | | |
| | NOTES Chloride and Sulfate analysis collected in one 500mL bottle SIGNATURE: Field Form w/ Signature on File | | | | | Sampled Prepared Checked | by: SAI | | | | ٧ | V O | od | | | |

| | | | UCTURE SOLU W FLOW G | TIONS, INC. ROUNDWA | TER SA | MPLING | | | | | |
|-------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-------------------------------------|---------------------------------------------------|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|----------------------------------------------------------------------|-------------------------------|-------------------------------------------------------|--------------------------------------|--------------|
| PROJECT | OLIN CHEMICA | AL SUPERFUND S | SITE, WILMINGTO | N, MA | WEL | .L ID | GW-34D | | | ROUND | NO. 2 |
| SAMPLE ID | | OC-GW-34[| D | | SITE T | YPE | Superfund | | | DATE | 5/17/2018 |
| TIME | START | 9:15 END | 10:05 | | JOB NUMBE | ER | 6107180016 | | | BOTTLE TIME | 9:45 |
| QC SAM | | SETTINGS DUP/MS/MSD | X TOP | EMENT POINT OF WELL RISER OF PROTECTIVE ER | CASING | PROTECTIVE CASING STIC (FROM GROU | KUP | FT. | PROTE(CASING DIFFER | FT. | |
| INITIAL DE TO WA | | 7.45 F | T. WELL DE | PTH ~ 35.75 | FT. | PID AMBIENT AIR | N/A | PPM | WELL DIAMET | ER 2 | IN. |
| | FINAL DEPTH TO WATER 7.45 FT. SCREEN LENGTH 10 | | | | FT. | PID WELL MOUTH | N/A | PPM | WELL INTEGR | YES | NO N/A |
| DRAWDO VOLU (final - i | JME < | <0.01 GA | | OF DRAWDOWN VOTAL VOLUME PU | | PRESSURE TO PUMP | N/A | PSI |] | CASING X CASING X LOCKED COLLAR X | <u>x</u> _ |
| TOTAL \ PUR((purge i | GED | 1.25 GA r minute) x time du | AL. Irration (minutes) x | <0.01 0.00026 gal/ml) | | REFILL TIMER SETTING | N/A | SEC. | DISCHA TIMER SETTING | N/A | SEC. |
| PURGE D | ATA | | | | | | | | | | |
| TIME | DEPTH TO WATER (ft.) (0.3 ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. COND. (mS/cm) (3%) | pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | COMM | IENTS |
| 9:20 | 7.45 | 160 | 17.31 | 0.087 | 7.74 | 1.44 | 0.01 | -12 | ~ 32 ft. | | |
| 9:25 | 7.45 | 160 | 17.06 | 0.082 | 7.25 | 0.49 | 0.01 | 63 | | | |
| 9:30 9:35 | 7.45 7.45 | 160 160 | 16.80 16.27 | 0.082 | 7.18 7.23 | 0.32 0.35 | 0.01 | 88 96 | | | |
| 9:40 | 7.45 | 160 | 16.26 | 0.083 | 7.29 | 0.33 | 0.01 | 98 | | | |
| 9:45 | 7.45 | 160 | 16.25 | 0.083 | 7.30 | 0.38 | 0.01 | 101 | | | |
| | Collect | Sample | | | | | | | | | |
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| TYPE C | NT DOCUMEN' DE PUMP ED BLADDER MCO BLADDER EOPUMP | _ | TYPE OF TUBING TEFLON OR HIGH DENSI X LDPE (Dedic | TEFLON LINED TY POLYETHYLEN | NE | POL STA | FPUMP MATERIAL YVINYL CHLORIDE INLESS STEEL CON (Dedicated) | Ē | | TYPE OF BLADD TEFLON OTHER | DER MATERIAL |
| ANALYTIC To Be Collected | CAL PARAMET | ERS | METI NUM | | | ESERVATION THOD | VOLUME REQUIRED | <u>)</u> | SAMPLE COLLECTED | 1 | |
| VOCs: Trimethylpentenes | | | | 4 D HCI HNV 4 D H2S 4 D 4 D 4 D | L / 4 DEG. C IEG. C 03 / 4 DEG. C 03 / 4 DEG. C IEG. C IEG. C IEG. C IEG. C 03 / 4 DEG. C | 1 X 500 mL 1 X 250 mL 1 X 500 mL 1 X 500 mL 1 X 500 mL | | X Chlo | DCs I Fe monia-Nitrogen oride fate cific Conductivity | | |
| PURGE O | BSERVATIONS | | NUMBER OF GAL | LONS | | LOCATION | SKETCH | _ | _ | | |
| CONTAINERIZED YES NO GENERATED ~ 1.25 gal. NOTES Chloride and Sulfate analysis collected in one 500mL bottle Collected DUP/MS/MSD | | | | | al. | Sampled by: BEG Prepared by: SAI | | | | W | ood. |
| SIGNATURE | GNATURE: Field Form w/ Signature on File | | | | | | by: CTM | | | | |

| | | T & INFRASTRU CORD - LO | | UTIONS, INC. | TER SAI | MPLING | | | | | |
|-------------------------------------------------------------------|--------------------------------------------------------------|-------------------------------------|---------------------------|-------------------------------------------|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|-------------------------------|----------------------------------------|-----------------------------------------------------------|--------------|
| PROJECT | OLIN CHEMIC | AL SUPERFUND S | SITE, WILMINGTO | DN, MA | WEL | LID | GW-35S | |] | ROUNE |) NO. 2 |
| SAMPLE ID | | OC-GW-358 | <u> </u> | | SITE T | | Superfund | |] | DATE | 5/17/2018 |
| TIME | START | 8:30 END | 9:05 | | JOB NUMBE | ER | 6107180016 | | 1 | BOTTLE TIME | 8:55 |
| | EVEL / PUMP | SETTINGS | MEASUF | REMENT POINT | | | | | _ | | |
| | CTED ID | N/A | TOI | P OF WELL RISER P OF PROTECTIVE HER | | PROTECTIVE CASING STIC (FROM GRO | CKUP | FT. | PROTE CASING DIFFER | i / WELL | A FT. |
| INITIAL DE TO WA | TER | 6.85 F | T. WELL D (TOR) | EPTH ~ 19.51 | FT. | PID AMBIENT AIF | R N/A | PPM | WELL DIAMET | ER 2 | IN. |
| FINAL DE TO WA | TER | 6.98 F | T. SCREEN LENGTH | | | PID WELL MOUTH | N/A | PPM | WELL INTEGR | YES | NO N/A |
| DRAWDO VOLU (final - i | JME | 0.02 GA | | OF DRAWDOWN V OTAL VOLUME PUI | | PRESSURE TO PUMP | N/A | PSI |] | CAP X CASING X LOCKED X COLLAR X | |
| TOTAL \ PUR((purge) | GED | 0.98 GA er minute) x time du | | 0.02 (0.00026 gal/ml) | | REFILL TIMER SETTING | N/A | SEC. | DISCHA TIMER SETTIN | N/A | SEC. |
| PURGE D | ATA | | | | | | | | | | |
| TIME | DEPTH TO WATER (ft.) (0.3 ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. COND. (mS/cm) (3%) | pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | COMM | MENTS |
| 8:35 | 6.98 | 150 | 13.08 | 1.01 | 10.65 | 10.96 | 15.4 | -67 | ~ 17 ft. | | |
| 8:40 | 6.98 | 150 | 13.22 | 0.994 | 10.86 | 7.50 | 9.7 | -84 | | | |
| 8:45 8:50 | 6.98 | 150 150 | 13.34 13.35 | 0.965 0.960 | 10.93 | 6.02 5.97 | 4.9 3.6 | -92 -97 | | | |
| 8:55 | 6.98 | 150 | 13.36 | 0.958 | 10.94 | 5.95 | 2.9 | -100 | | | |
| | Collec | t Sample | | | | | | | | | |
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| FOLUDIAE | NT DOCUMEN | ITATION | | | | | | | | | |
| TYPE C | NT DOCUMEN DE PUMP ED BLADDER MCO BLADDER EOPUMP | | | R TEFLON LINED ITY POLYETHYLEN | ΙE | POL STA | F PUMP MATERIAL LYVINYL CHLORIDE LINLESS STEEL CON (Dedicated) | | | TYPE OF BLAD | DER MATERIAL |
| ANALYTION To Be Collecte | CAL PARAME | TERS | | HOD <u>MBER</u> | | ESERVATION THOD | VOLUME <u>REQUIRED</u> | ! | SAMPLE COLLECTED | <u>)</u> | |
| SV(| VOCs: Trimethylpentenes | | | | HCI 4 DI HCI HNC 4 DI H2S 4 DI 4 DI 4 DI | L / 4 DEG. C EG. C L / 4 DEG. C O3 / 4 DEG. C EG. C EG. C EG. C EG. C EG. C | 3 X 40 mL 2 X 1 L AG 3 X 40 mL 1 X 500 mL 1 X 500 mL 1 X 250 mL 1 X 500 mL 1 X 500 mL | | VO(SV(VPH Dis. pH X Ami X Chl X Suli | Cs DCs H Fe monia-Nitrogen oride fate scific Conductivity | |
| PURGE WA | | _ | NUMBER OF GA | | | LOCATION | SKETCH | | | | |
| NOTES Chloride and Sulfate analysis collected in one 500mL bottle | | | | al | Prepared | by: BEG by: SAI by: CTM | | | W | ood. | |
| SIGNATURE | E: Fie | eld Form w/ Signa | ture on File | | | | | | | | |

| | | | UCTURE SOLU W FLOW G | TIONS, INC. ROUNDWA | TER SA | MPLING | | | | | |
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| PROJECT | OLIN CHEMICA | AL SUPERFUND S | SITE, WILMINGTO | N, MA | WEL | .L ID | GW-43SR | |] | ROUND | NO. 2 |
| SAMPLE ID | | OC-GW-43S | SR | | SITE T | YPE | Superfund | |] | DATE | 5/18/2018 |
| TIME | START | 7:20 END | 8:05 | | JOB NUMBE | ER | 6107180016 | |] | BOTTLE TIME | 7:55 |
| QC SAM | EVEL / PUMP S MPLE CTED ID | SETTINGS N/A | X TOF | EMENT POINT OF WELL RISER OF PROTECTIVE | CASING | PROTECTIVE CASING STIC (FROM GRO | CKUP | FT. | PROTEC CASING DIFFERI | / WELL | FT. |
| INITIAL DE TO WA | | 6.27 F | T. WELL DE | EPTH ~ 17.4 | FT. | PID AMBIENT AIF | N/A | PPM | WELL DIAMET | ER 2 | IN. |
| FINAL DE TO WA | | 6.27 F | , , | | FT. | PID WELL MOUTH | N/A | PPM | WELL INTEGR | YES | NO N/A |
| VOLU | | | | OF DRAWDOWN V | | PRESSURE TO PUMP | N/A | PSI |] | ITY: CAP X CASING X LOCKED X COLLAR X | |
| TOTAL \ PUR((purge) | GED | 1.73 GA minute) x time du | AL. uration (minutes) x | <0.01 0.00026 gal/ml) | | REFILL TIMER SETTING | N/A | SEC. | DISCHA TIMER SETTING | N/A | SEC. |
| PURGE D | ATA | | | | | | | | | | |
| TIME | DEPTH TO WATER (ft.) (0.3 ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. COND. (mS/cm) (3%) | pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | COMM | IENTS |
| 7:25 | 6.27 | 190 | 17.21 | 0.837 | 5.46 | 11.02 | 11.1 | 270 | ~ 16 ft. | | |
| 7:30 | 6.27 | 190 | 16.86 | 0.833 | 5.40 | 9.69 | 12.6 | 260 | | | |
| 7:35 7:40 | 6.27 6.27 | 190 190 | 15.53 15.10 | 0.830 | 5.71 5.98 | 8.49 8.15 | 17.4 17.2 | 227 221 | | | |
| 7:45 | 6.27 | 190 | 14.58 | 0.840 | 6.37 | 7.51 | 17.8 | 220 | | | |
| 7:50 | 6.27 | 190 | 14.50 | 0.842 | 6.39 | 7.43 | 18.1 | 220 | | | |
| 7:55 | 6.27 | 190 | 14.45 | 0.843 | 6.41 | 7.41 | 17.6 | 220 | | | |
| | Collect | Sample | | | + | | | | | | |
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| TYPE C | NT DOCUMEN' DE PUMP ED BLADDER MCO BLADDER EOPUMP | | TYPE OF TUBING TEFLON OR HIGH DENS | TEFLON LINED TY POLYETHYLEN | NE | POL STA | F PUMP MATERIAL YVINYL CHLORIDE INLESS STEEL CON (Dedicated) | : | | TYPE OF BLADE TEFLON OTHER | DER MATERIAL |
| ANALYTIC To Be Collecte | CAL PARAMET | ERS | MET NUM | | | ESERVATION THOD | VOLUME REQUIRED | 1 | SAMPLE COLLECTED | | |
| VOCs: Trimethylpentenes 8260 B SVOCs: NDPA and BEHP 8270 C VPH MA VPH Dissolved Fe DIS. 6010B pH SM 4500 H+B X Ammonia-Nitrogen 10-107-06-1 X Chloride 300.0 X Sulfate 300.0 X Specific Conductivity SM 2510B X Dissolved AI, Cr DIS. 6010B | | | | | 4 D HCI HNV 4 D H2S 4 D 4 D 4 D | L / 4 DEG. C IEG. C L / 4 DEG. C 03 / 4 DEG. C IEG. C IEG. C IEG. C IEG. C IEG. C O3 / 4 DEG. C | 1 X 500 mL 1 X 250 mL 1 X 500 mL 1 X 500 mL 1 X 500 mL | | X Chlo | OCs I Fe monia-Nitrogen oride ate cific Conductivity | |
| PURGE WA | | _ | NUMBER OF GAI | LLONS | | LOCATION | SKETCH | | | | |
| CONTAINERIZED YES NO GENERATED ~ 1.73 gal. NOTES Chloride and Sulfate analysis collected in one 500mL bottle | | | | | al. | Sampled Prepared Checked | - | | | W | ood. |
| SIGNATURE | =. Fiel | d Form w/ Signa | ature on File | | | | | | | | |

| | | | UCTURE SOLU W FLOW G | JTIONS, INC. ROUNDWA | TER SAI | MPLING | | | | | |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------------------------------|----------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|-------------------------------|---------------------------|--------------------------------------------------------|--------------|
| PROJECT | OLIN CHEMICA | AL SUPERFUND S | SITE, WILMINGTO | N, MA | WEL | L ID | GW-76S | |] | ROUNE |) NO. 2 |
| SAMPLE ID | | OC-GW-769 | S | | SITE TY | YPE | Superfund | |] | DATE | 5/18/2018 |
| TIME | START | 10:10 END | 10:40 | | JOB NUMBE | ER | 6107180016 | |] | BOTTLE TIME | 10:30 |
| QC SAN | EVEL / PUMP : MPLE CTED ID | SETTINGS N/A | X TOP | REMENT POINT OF WELL RISER OF PROTECTIVE | CASING | PROTECTIVE CASING STIC (FROM GRO | CKUP | FT. | PROTE CASING DIFFER | à / WELL | A FT. |
| INITIAL DEI TO WA | | 7.00 F1 | T. WELL DE | EPTH | | PID | , | | WELL | | |
| FINAL DEI | | 7.02 F1 | (TOR) T. SCREEN LENGTH | | | AMBIENT AIF PID WELL MOUTH | N/A N/A | PPM | DIAMET | YES | |
| DRAWDO VOLU (final - ir | JME - | <0.01 GA | AL. RATIO (| OF DRAWDOWN V | /OLUME | PRESSURE TO PUMP | N/A | PSI | | CASING X | |
| TOTAL V PURO (purge r | GED | 0.91 GA r minute) x time du | AL. uration (minutes) x | <0.01 0.00026 gal/ml) | | REFILL TIMER SETTING | N/A | SEC. | DISCHA TIMER SETTIN | N/A | SEC. |
| PURGE D | ATA | | | | | | | | | | |
| TIME | DEPTH TO WATER (ft.) (0.3 ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. COND. (mS/cm) (3%) | pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | COMI | MENTS |
| 10:15 | 7.02 | 175 | 12.60 | 0.241 | 7.89 | 7.37 | 106 | 149 | ~ 12 ft. | | |
| 10:20 | 7.02 | 175 | 12.24 | 0.229 | 7.85 | 7.27 | 116 | 133 | | | |
| 11:20 10:25 | 7.02 7.02 | 175 175 | 11.90 12.05 | 0.220 | 7.60 7.60 | 6.50 6.41 | 27.1 29.2 | 130 128 | | | |
| 10:30 | 7.02 | 175 | 12.01 | 0.219 | 7.60 | 6.39 | 26.6 | 125 | | | |
| | Collect | Sample | | | | | | | | | |
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| EQUIPMEN | I NT DOCUMEN | TATION | | | | | | | | | |
| TYPE O | DE PUMP ED BLADDER MCO BLADDER EOPUMP | _ | TYPE OF TUBING TEFLON OR X HIGH DENSI LDPE (Dedica | TEFLON LINED | NE | POI | F PUMP MATERIAL LYVINYL CHLORIDE AINLESS STEEL ICON (Dedicated) | | | TYPE OF BLAD TEFLON OTHER | DER MATERIAL |
| ANALYTIC To Be Collected | CAL PARAMET | ERS | | | | ESERVATION THOD | VOLUME <u>REQUIRED</u> | | SAMPLE COLLECTED | <u>)</u> | |
| SVC VPH Diss pH X Ami X Chli X Sult | NUMBER VOCs: Trimethylpentenes 8260 B SVOCs: NDPA and BEHP 8270 C VPH MA VPH Dissolved Fe DIS. 6010B | | | C /PH 6010B 1500 H+B 07-06-1 0 0 | 4 DI HCL HNC 4 DI H2S 4 DI 4 DI 4 DI | L / 4 DEG. C EG. C L / 4 DEG. C O3 / 4 DEG. C EG. C EG. C EG. C EG. C EG. C | 1 X 500 mL C 1 X 250 mL 1 X 500 mL 1 X 500 mL 1 X 500 mL | | X Chl | OCs I Fe monia-Nitrogen oride fate scific Conductivity | |
| PURGE WA | TER | _ | NUMBER OF GAL GENERATED | | | LOCATION | ISKETCH | | | | |
| NOTES | | | | | | Prepared | l by: BEG l by: SAI l by: CTM | | | W | ood. |

| | | & INFRASTRU CORD - LOV | | TIONS, INC. ROUNDWA | TER SAI | MPLING | | | | | |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------------------|-----------------------------------------------------|---------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------|------------|
| PROJECT | OLIN CHEMICA | AL SUPERFUND S | SITE, WILMINGTO | N, MA | WEL | L ID | GW-78S | |] | ROUND N | IO. 2 |
| SAMPLE ID | | OC-GW-785 | 3 | | SITE TY | YPE | Superfund | | | DATE 5 | /16/2018 |
| TIME | START | 9:40 END | 10:18 | | JOB NUMBE | ER | 6107180016 | | | BOTTLE TIME | 10:10 |
| QC SAN | EVEL / PUMP S | SETTINGS N/A | X TOP | EMENT POINT OF WELL RISER OF PROTECTIVE ER | CASING | PROTECTIVE CASING STIC (FROM GROU | KUP | FT. | PROTEC CASING DIFFERE | / WELL | FT. |
| INITIAL DEI TO WA | | 4.21 FT | | PTH ~ 10.35 | | PID AMBIENT AIR | N/A | PPM | WELL DIAMETE | ER 2 | IN. |
| FINAL DE | | 4.37 FT | (TOR) SCREEN LENGTH | 9 | | PID WELL MOUTH | N/A | PPM | WELL | YES | NO N/A |
| DRAWDC VOLU (final - in | IME | 0.02 GA | L. RATIO | DF DRAWDOWN VOTAL VOLUME PUR | OLUME | PRESSURE TO PUMP | N/A | PSI | | TY: CAP X CASING X LOCKED X COLLAR X | |
| TOTAL V PURO (purge r | GED | 1.33 GA minute) x time du | | 0.02 0.00026 gal/ml) | | REFILL TIMER SETTING | N/A | SEC. | DISCHAF TIMER SETTING | N/A | SEC. |
| PURGE DA | ATA | | | | | | | | | | |
| TIME | DEPTH TO WATER (ft.) (0.3 ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. COND. (mS/cm) (3%) | pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | COMME | NTS |
| 9:45 | 4.36 | 170 | 14.17 | 1.23 | 9.12 | 1.69 | 10.2 | -46 | ~ 9 ft. | | |
| 9:50 | 4.37 | 170 | 13.45 | 1.20 | 8.99 | 0.49 | 1.7 | -36 | | | |
| 9:55 10:00 | 4.37 4.37 | 170 170 | 12.54 12.07 | 1.06 | 10.31 | 0.46 0.17 | 0.01 | -17 -7 | | | |
| 10:05 | 4.37 | 170 | 11.94 | 1.07 | 10.10 | 0.17 | 0.01 | -5 | | | |
| 10:10 | 4.37 | 170 | 11.89 | 1.07 | 10.10 | 0.01 | 0.01 | -3 | | | |
| | Collect | | | | | | | | | | |
| | | Collect Sample | | | | | | | | | |
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| TYPE C | NT DOCUMEN' DE PUMP ED BLADDER MCO BLADDER EOPUMP | <u>.</u> | TYPE OF TUBING TEFLON OR HIGH DENSI LDPE (Dedic | TEFLON LINED TY POLYETHYLEN | IE | POL STAI | PUMP MATERIAL YVINYL CHLORIDE NLESS STEEL CON (Dedicated) | : | | TYPE OF BLADDE TEFLON OTHER | R MATERIAL |
| ANALYTIC To Be Collected | CAL PARAMET | ERS | | | | ESERVATION THOD | VOLUME REQUIRED | 1 | SAMPLE COLLECTED | | |
| SVC VPH Diss pH X Amn X Chl X Sul' X Spe | NUMBER VOCs: Trimethylpentenes 8260 B SVOCs: NDPA and BEHP 8270 C VPH MA VPH Dissolved Fe DIS. 6010B | | | | | L / 4 DEG. C EG. C L / 4 DEG. C O3 / 4 DEG. C EG. C EG. C EG. C EG. C EG. C EG. C | 3 X 40 mL 2 X 1 L AG 3 X 40 mL 1 X 500 mL | | X Chlo | CS Fe nonia-Nitrogen vride ate cific Conductivity | |
| PURGE WA | TER | | NUMBER OF GAL | LONS | | LOCATION | SKETCH | | | | |
| NOTES | ONTAINERIZED YES NO GENERATED ~ 1.33 gal. | | | | | | by: BEG by: SAI by: CTM | | | Wo | od. |

| | | & INFRASTRU CORD - LOV | | TIONS, INC. ROUNDWA | TER SAI | MPLING | | | | | |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------|-----------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|-------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------|-------------|
| PROJECT | OLIN CHEMICA | AL SUPERFUND S | SITE, WILMINGTO | N, MA | WEL | L ID | GW-79S | |] | ROUND N | IO. 2 |
| SAMPLE ID | | OC-GW-795 | 6 | | SITE T | YPE | Superfund | |] | DATE 5 | 5/16/2018 |
| TIME | START | 10:50 END | 11:28 | | JOB NUMBE | ER | 6107180016 | |] | BOTTLE TIME | 11:20 |
| QC SAN | EVEL / PUMP S | SETTINGS N/A | X TOP | EMENT POINT OF WELL RISER OF PROTECTIVE ER | | PROTECTIVE CASING STIC (FROM GROU | KUP | FT. | PROTEC CASING DIFFERE | / WELL | FT. |
| INITIAL DE | | 3.00 FT | Г. WELL DE | PTH ~ 11.25 | FT. | PID AMBIENT AIR | N/A | PPM | WELL DIAMETE | ER 2 | IN. |
| FINAL DEI TO WA | | 3.00 FT | , , | 10 | | PID WELL MOUTH | N/A | PPM | WELL | YES | NO N/A |
| DRAWDC VOLU (final - i | IME < | <0.01 GA | L. RATIO (| OF DRAWDOWN V | OLUME | PRESSURE TO PUMP | N/A | PSI |] | TY: CAP X CASING X LOCKED X COLLAR X | |
| TOTAL V PURO (purge r | GED | 1.25 GA minute) x time du | | <0.01 0.00026 gal/ml) | | REFILL TIMER SETTING | N/A | SEC. | DISCHAI TIMER SETTING | N/A | SEC. |
| PURGE D | ATA | | | | | | | | | | |
| TIME | DEPTH TO WATER (ft.) (0.3 ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. COND. (mS/cm) (3%) | pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | COMME | ENTS |
| 10:55 | 3.00 | 160 | 14.34 | 1.50 | 8.67 | 3.78 | 34.7 | -137 | ~ 9 ft. | | |
| 11:00 | 3.00 | 160 | 13.63 | 1.58 | 8.75 | 4.04 | 29.9 | 14 | | | |
| 11:05 11:10 | 3.00 | 160 160 | 13.41 | 1.58 1.55 | 8.69 8.66 | 3.85 1.73 | 27.1 29.3 | 15 13 | | | |
| 11:15 | 3.00 | 160 | 12.24 | 1.56 | 8.65 | 1.75 | 30.1 | 13 | | | |
| 11:20 | 3.00 | 160 | 12.20 | 1.56 | 8.65 | 1.77 | 31.2 | 12 | | | |
| | Collect | 3.00 160 Collect Sample | | | | | | | | | |
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| TYPE C | NT DOCUMEN' OF PUMP ED BLADDER MCO BLADDER EOPUMP | | TYPE OF TUBING TEFLON OR HIGH DENSI | TEFLON LINED TY POLYETHYLEN | IE | POL STA | F PUMP MATERIAL YVINYL CHLORIDE INLESS STEEL CON (Dedicated) | : | | TYPE OF BLADDE TEFLON OTHER | ER MATERIAL |
| ANALYTIC To Be Collected | CAL PARAMET | ERS | | | | ESERVATION THOD | VOLUME REQUIRED | ! | SAMPLE COLLECTED | | |
| SVC VPH Diss pH X Amn X Chl X Sul' X Spe | NUMBER VOCs: Trimethylpentenes 8260 B SVOCs: NDPA and BEHP 8270 C VPH MA VPH Dissolved Fe DIS. 6010B | | | | 4 DI HCI HNC 4 DI H2S 4 DI 4 DI 4 DI | L / 4 DEG. C EG. C L / 4 DEG. C O3 / 4 DEG. C EG. C EG. C EG. C EG. C EG. C | 1 X 500 mL 1 X 250 mL 1 X 500 mL 1 X 500 mL 1 X 500 mL | | X Chlo | Cs Fe nonia-Nitrogen ride ate cific Conductivity | |
| PURGE WA | TER | | NUMBER OF GAL | LONS | | LOCATION | SKETCH | | | | |
| NOTES | ONTAINERIZED YES NO GENERATED ~ 1.25 gal. | | | | | | by: BEG by: SAI by: CTM | | | Wo | od. |

| | | & INFRASTRI | | UTIONS, INC. | ATER SAI | MPLING | | | | | |
|------------------------------|--------------------------------------|-------------------------------------|---------------------------|------------------------------------------|---------------------------|----------------------------------------|-------------------------------------|-------------------------------|---------------------------|----------------|--------------|
| PROJECT | OLIN CHEMICA | AL SUPERFUND S | SITE, WILMINGTO | ON, MA | WEL | I ID | GW-201S | |] | ROUNI | D NO. 2 |
| SAMPLE ID | | OC-GW-201 | S | | SITE T | | Superfund | |] | DATE | 5/18/2018 |
| TIME | START | 11:20 END | 11:15 | | JOB NUMBE | ER | 6107180016 | | 1 | BOTTLE TIME | 11:45 |
| | EVEL / PUMP : | SETTINGS | MEASU | REMENT POINT | | | | | _ | <u>-</u> | |
| | CTED ID | N/A | TO | P OF WELL RISEF P OF PROTECTIV HER | | PROTECTIVE CASING STIC (FROM GRO | CKUP | FT. | PROTE CASING DIFFER | i / WELL | A FT. |
| TO WA | TER | 3.68 F | T. WELL D | ©EPTH ~ 14.9 | 5 FT. | PID AMBIENT AIF | R N/A | PPM | WELL DIAMET | ER 2 | IN. |
| FINAL DE TO WA | TER | 3.93 F | T. SCREE LENGTI | | FT. | PID WELL MOUTH | N/A | PPM | WELL INTEGR | YES | S NO N/A |
| DRAWDO VOLU (final - i | JME | 0.04 GA | | OF DRAWDOWN FOTAL VOLUME P | | PRESSURE TO PUMP | N/A | PSI |] | CAP | |
| TOTAL \ PUR(| GED | 1.04 GA r minute) x time du | | 0.04 x 0.00026 gal/ml) | | REFILL TIMER SETTING | N/A | SEC. | DISCHA TIMER SETTIN | N/A | SEC. |
| PURGE D | ATA | | | | | | | | | | |
| TIME | DEPTH TO WATER (ft.) (0.3 ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. COND. (mS/cm) (3%) | pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | СОМ | MENTS |
| 11:25 | 3.93 | 160 | 13.74 | 2.69 | 6.89 | 1.88 | 306 | 99 | ~ 12 ft. | | |
| 11:30 | 3.93 3.93 | 160 | 13.69 | 2.70 | 7.10 | 0.19 0.01 | 251 85 | 96 | | | |
| 11:35 11:40 | 3.93 | 160 160 | 13.65 13.49 | 2.62 | 7.60 7.63 | 0.01 | 83 | 88 86 | | | |
| 11:45 | 3.93 | 160 | 13.45 | 2.62 | 7.64 | 0.01 | 81 | 85 | | | |
| | Collect | Sample | | | | | | | | | |
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| TYPE C | NT DOCUMEN OF PUMP ED BLADDER | | TYPE OF TUBIN | I <u>G</u> R TEFLON LINED | | | F PUMP MATERIAL LYVINYL CHLORIDE | | | TYPE OF BLAD | DER MATERIAL |
| SIM | MCO BLADDER EOPUMP | [| | SITY POLYETHYLE | ENE | STA | NINLESS STEEL CON (Dedicated) | | | OTHER_ | |
| ANALYTIC To Be Collected | CAL PARAMET | TERS | | THOD <u>MBER</u> | | ESERVATION THOD | VOLUME REQUIRED | ! | SAMPLE COLLECTED | <u>)</u> | |
| vo | Cs: Trimethylpen | tenes | 826 | 0 B | HCI | L / 4 DEG. C | 3 X 40 mL | | VO | Os | |
| SVO | OCs: NDPA and I | BEHP | 827 MA | 0 C VPH | | EG. C L / 4 DEG. C | 2 X 1 L AG 3 X 40 mL | | SVC | | |
| Dis | solved Fe | | DIS | . 6010B | HNO | 03 / 4 DEG. C | 1 X 500 mL | | Dis. | | |
| pH x Am | monia-Nitrogen | | | 4500 H+B 107-06-1 | | EG. C SO4 / 4 DEG. (| 1 X 500 mL C 1 X 250 mL | | pH X Amı | monia-Nitrogen | |
| x Chl | | | 300 300 | | | EG. C EG. C | 1 X 500 mL 1 X 500 mL | | x Chl | | |
| X Spe | ecific Conductivity | SM | 2510B | 4 D | EG. C | 1 X 500 mL | | Х Ѕре | ecific Conductivity | | |
| X Dis | solved Al, Cr | | DIS | . 6010B | HNO | 03 / 4 DEG. C | 1 X 500 mL | | x Dis. | Al, Cr | |
| PURGE O | BSERVATION | s | | | | LOCATION | SKETCH | | | | |
| PURGE WA | | | NUMBER OF GA GENERATED | ALLONS ~ 1.04 | gal. | | | | | | |
| NOTES | Chloride and Su | ılfate analysis colle | ected in one 500r | mL bottle | | | | | | | |
| | | | | Sampled | by: BEG | | | \A// | ood. | | |
| | | | | | | Prepared | | | | AA (| 700. |
| SIGNATURE | E: Fiel | ld Form w/ Signa | ature on File | | | Checked | by: CTM | | | | |

| | | & INFRASTRU CORD - LOV | | ITIONS, INC. ROUNDWA | TER SA | MPLING | | | | |
|-------------------------------|----------------------------------------------------|-------------------------------------|----------------------------|--------------------------------------------------|---------------------------|-----------------------------------------|------------------------------------------------------------|-------------------------------|-----------------------------|---------------------------------------|
| PROJECT | OLIN CHEMICA | AL SUPERFUND S | ITE, WILMINGTO | N, MA | WEL | .L ID | GW-202S | | | ROUND NO. 2 |
| SAMPLE ID | | OC-GW-202 | S | | SITE T | YPE | Superfund | | | DATE 5/15/2018 |
| TIME | START | 9:30 END | 10:15 | | JOB NUMBE | ER | 6107180016 | |] | BOTTLE TIME 10:05 |
| QC SAM | EVEL / PUMP S | N/A | X TOF | REMENT POINT P OF WELL RISER P OF PROTECTIVE HER | CASING | PROTECTIVE CASING STIC (FROM GROU | KUP | FT. | PROTEC CASING DIFFERE | / WELL |
| INITIAL DEF | | 6.20 FT | | | | PID | | | WELL | |
| FINAL DEF | | 6.23 FT | (TOR) SCREEN | ~ 13.3 | FT. | AMBIENT AIR | N/A | PPM | DIAMETE WELL | ER |
| DRAWDO VOLU (final - ir | ME < | <0.01 GA | | 8 OF DRAWDOWN V | | MOUTH PRESSURE TO PUMP | N/A | PPM | INTEGRI | TY: CAP X |
| TOTAL V | OL. | 1.37 GA | L. | <0.01 | | REFILL TIMER SETTING | N/A | SEC. | DISCHAF TIMER SETTING | RGE N/A SEC. |
| PURGE DA | ATA | | | | | | | | | |
| TIME | DEPTH TO WATER (ft.) (0.3 ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. COND. (mS/cm) (3%) | pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | COMMENTS |
| 9:35 | 6.23 | 150 | 15.52 | 0.744 | 8.88 | 7.11 | 7.2 | 73 | ~ 11 ft. | |
| 9:40 | 6.23 | 150 | 14.93 | 0.738 | 8.18 | 1.46 | 3.4 | 102 | | |
| 9:45 9:50 | 6.23 6.23 | 150 150 | 14.17 13.65 | 0.745 0.749 | 8.08 8.12 | 0.62 | 1.6 4.3 | 111 | | |
| 9:55 | 6.23 | 150 | 12.95 | 0.749 | 8.04 | 0.30 | 0.6 | 120 | | |
| 10:00 | 6.23 | 150 | 12.86 | 0.764 | 8.01 | 0.01 | 1.3 | 123 | | |
| 10:05 | 6.23 | 150 | 12.87 | 0.764 | 8.00 | 0.01 | 1.5 | 126 | | |
| | Collect | 6.23 150 Collect Sample | | | | | | | | |
| | | | | | 1 | | | | | |
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| TYPE O | NT DOCUMEN' IF PUMP ID BLADDER INCO BLADDER IOPUMP | : <u>[</u> | | TEFLON LINED TY POLYETHYLEN | lE | POL STA | PUMP MATERIAL YVINYL CHLORIDE INLESS STEEL CON (Dedicated) | | | TYPE OF BLADDER MATERIAL TEFLON OTHER |
| ANALYTIC To Be Collected | CAL PARAMET | ERS | MET <u>NUM</u> | HOD IBER | | ESERVATION THOD | VOLUME REQUIRED | | SAMPLE COLLECTED | |
| | Cs: Trimethylpeni | | 8260 8270 | В | HC | L / 4 DEG. C | 3 X 40 mL 2 X 1 L AG | | voc | |
| VPH | | | MA \ | /PH | | L / 4 DEG. C | 3 X 40 mL | | VPH | |
| pH | solved Fe | | | 6010B I500 H+B | | O3 / 4 DEG. C EG. C | 1 X 500 mL 1 X 500 mL | | Dis. | Fe |
| X Amr | monia-Nitrogen | | 10-1 300. | 07-06-1 n | | SO4 / 4 DEG. (EG. C | 1 X 250 mL 1 X 500 mL | | X Amm | nonia-Nitrogen |
| X Sulf | fate | | 300. |) | 4 D | EG. C | 1 X 500 mL | | X Sulfa | ate |
| | cific Conductivity solved Al, Cr | | | 2510B 6010B | | EG. C O3 / 4 DEG. C | 1 X 500 mL 1 X 500 mL | | X Spec | cific Conductivity AI, Cr |
| <u> </u> | | | | | | | | | | |
| PURGE WA | | | NUMBER OF GA | | | LOCATION | SKETCH | | | |
| NOTES | | NO (| GENERATED cted in one 500m | ~ 1.37 g | al. | | | | | |
| | | • | | | | | | | | |
| | | | | | | Sampled | by: BEG | | | اء د جير |
| | | | | | | Prepared | · | | | wood |
| SIGNATURE | : Eigl | d Form w/ Signat | ture on Eilo | | | Checked | by: CTM | | | |

| | | & INFRASTRU CORD - LOV | | - | TER SAI | MPLING | | | | |
|------------------------------|------------------------------------------------------|-------------------------------------|----------------------------|-----------------------------------------------------|---------------------------|------------------------------------------|--------------------------------------------------------------|-------------------------------|-----------------------------|---------------------------------------|
| PROJECT | OLIN CHEMICA | AL SUPERFUND SI | ITE, WILMINGTON | N, MA | WEL | L ID | GW-202D | |] | ROUND NO. 2 |
| SAMPLE ID | | OC-GW-202 |) | Ţ | SITE T | YPE | Superfund | |] | DATE 5/15/2018 |
| TIME | START | 10:15 END | 11:20 | | JOB NUMBE | ER | 6107180016 | | | BOTTLE TIME 10:40 |
| QC SAM | | SETTINGS UP/MS/MSD | X TOP | EMENT POINT OF WELL RISER OF PROTECTIVE ER | | PROTECTIVE CASING STICE (FROM GROU | | FT. | PROTEC CASING DIFFERI | / WELL |
| INITIAL DE TO WA | | 5.57 FT. | | PTH ~ 23.7 | FT. | PID AMBIENT AIR | N/A | PPM | WELL DIAMET | ER 2 IN. |
| FINAL DE TO WA | | 5.65 FT. | (TOR) SCREEN LENGTH | | | PID WELL MOUTH | N/A | PPM | WELL | YES NO N/A |
| DRAWDO VOLU (final - i | JME | 0.01 GAL h} or x 0.65 {4-inch | L. RATIO C | OF DRAWDOWN V | /OLUME | PRESSURE TO PUMP | N/A | PSI |] | TY: |
| TOTAL \ PUR((purge i | GED | 1.17 GAL minute) x time dur | | <0.01 0.00026 gal/ml) | | REFILL TIMER SETTING | N/A | SEC. | DISCHA TIMER SETTING | N/A SEC. |
| PURGE D | ATA | | | | | | | | | |
| TIME | DEPTH TO WATER (ft.) (0.3 ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. COND. (mS/cm) (3%) | pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | COMMENTS |
| 10:20 | 5.65 | 180 | 14.33 | 2.22 | 6.34 | 3.95 | 70.1 | 213 | ~ 20 ft. | |
| 10:25 | 5.65 | 180 | 13.72 | 2.30 | 6.33 | 2.73 | 54.4 | 226 | | |
| 10:30 10:35 | 5.65 5.65 | 180 | 13.82 13.86 | 2.35 2.40 | 6.31 6.28 | 2.44 | 10.3 11.1 | 229 231 | | |
| 10:40 | 5.65 | 180 | 13.90 | 2.40 | 6.26 | 2.30 | 10.7 | 232 | | |
| | Collect | Sample | | | | | | | | |
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| TYPE C | NT DOCUMEN DE PUMP ED BLADDER MCO BLADDER EOPUMP |] | | TEFLON LINED TY POLYETHYLEN | NE | POL' | PUMP MATERIAL (VINYL CHLORIDE NLESS STEEL CON (Dedicated) | | | TYPE OF BLADDER MATERIAL TEFLON OTHER |
| ANALYTIC To Be Collected | CAL PARAMET | ERS | METH NUMB | | | ESERVATION THOD | VOLUME REQUIRED | | SAMPLE COLLECTED | |
| | Cs: Trimethylpen | enes | 8260 | | | L / 4 DEG. C | 3 X 40 mL | | Voc | |
| SVC | OCs: NDPA and E | | 8270 | С | 4 D | EG. C | 2 X 1 L AG | | SVC | OCs . |
| VPI Dis | H solved Fe | | MA VI DIS. 6 | | | L / 4 DEG. C O3 / 4 DEG. C | 3 X 40 mL 1 X 500 mL | | VPH Dis. | |
| pH X Am | monia-Nitrogen | | | 500 H+B 07-06-1 | | EG. C SO4 / 4 DEG. C | 1 X 500 mL 1 X 250 mL | | pH X Amn | nonia-Nitrogen |
| X Chl | oride | | 300.0 | | 4 D | EG. C | 1 X 500 mL | | X Chlo | oride |
| X Sul | fate ecific Conductivity | | 300.0 SM 25 | | | EG. C EG. C | 1 X 500 mL 1 X 500 mL | | X Sulf | ate cific Conductivity |
| X Dis | solved Al, Cr | | DIS. 6 | 3010B | HNO | O3 / 4 DEG. C | 1 X 500 mL | | X Dis. | Al, Cr |
| PURGE O | BSERVATIONS | 3 | | | | LOCATION | SKETCH | | | |
| PURGE WA | | | NUMBER OF GAL GENERATED | LONS 1.17 g | al. | | | | | |
| NOTES | Chloride and Su Collected DUP/N | lfate analysis collec | cted in one 500mL | . bottle | | | | | | |
| | | | | | | Sampled I | | | | wood |
| | | | | | | Prepared Checked b | | | | *** |
| SIGNATURE | E: Fiel | d Form w/ Signat | ure on File | | | | | | | |

| | | | INFRASTRI IRD - LO | | | IONS, INC. OUNDWA | TER SA | MPLING | | | | | | | | |
|------------------------------------------------|------------------------------------------|----------------------|------------------------------------|--------------------------------------------------|----------------------|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------|----------------------------|--------------------------------------------------|--------------------------------------------------|----------------------------|---------|------------|---------------------|
| PROJECT | OLIN CH | HEMICAL S | SUPERFUND S | SITE, WILM | NGTON, | MA | WEI | LL ID | G | W-CA1 | |] | | ROUND N | NO. 2 | 2 |
| SAMPLE ID | 1 | (| OC-GW-CA | .1 | | | SITE T | | | perfund | | j | DAT | | 5/17/2018 | |
| TIME | START | 7 | ':45 END | 8 | 3:25 | j | JOB NUMB | SER | 610 | 7180016 | |] | BOTTLE TIM | ME | 8:15 | |
| WATER LI | | UMP SET | TTINGS | | | MENT POINT | | | | _ | _ | | _ | | | <u>-</u> |
| | CTED ID | | N/A | X | | F WELL RISER F PROTECTIVE | CASING | PROTECTIVE CASING STIC (FROM GRO | CKUP | | FT. | PROTEG CASING DIFFER | 3 / WELL | N/A | FT. | |
| TO WA | TER | 6.4 | .2 F | | ELL DEPT OR) | гн ~ 9.27 | FT. | PID AMBIENT AIF | ٠ <u> </u> | N/A | PPM | WELL DIAMET | ER | 2 | IN. | |
| FINAL DEI TO WA | TER | 6.4 | ·2 F | | CREEN NGTH | 5 | FT. | PID WELL MOUTH | | N/A | PPM | WELL INTEGR | | YES | NO N | N/A |
| VOLU | JME | <0.0 6 {2-inch} o | 01 GA or x 0.65 {4-inc | | | DRAWDOWN VO AL VOLUME PUF | | PRESSURE TO PUMP | | N/A | PSI |] | CASING LOCKED COLLAR | X X | = : | = |
| TOTAL V PURO (purge r | GED | 1.3 ters per mir | 37 GA nute) x time du | | utes) x 0.0 | <0.01 00026 gal/ml) | | REFILL TIMER SETTING | | N/A | SEC. | DISCHA TIMER SETTING | | N/A | SEC. | |
| PURGE D | ATA | | | | | | | | | | | | | | | |
| TIME | DEPTH WATER (0.3 ft | R (ft.) | URGE RATE (ml/min) (100-400) | TEMP. (deg. C (3%) | | SPEC. COND. (µS/cm) (3%) | pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | (N | BIDITY NTU) 6) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | | COMME | ENTS | |
| 7:50 | 6.42 | | 175 | 15.11 | | 0.518 | 7.83 | 7.37 | |).01 | 106 | ~ 8 ft. | | | | |
| 7:55 8:00 | 6.42 | | 175 | 13.17 | | 0.397 | 7.88 | 5.56 | | 0.01 | 73 | | | | | |
| 8:00 8:05 | 6.42 | | 175 175 | 12.95 12.77 | | 0.391 | 7.90 8.01 | 4.97 4.13 | |).01).01 | 69 58 | | | | | |
| 8:10 | 6.42 | | 175 | 12.72 | | 0.384 | 7.99 | 3.96 | |).01 | 59 | | | | | |
| 8:15 | 6.42 | 2 | 175 | 12.69 |) | 0.384 | 8.00 | 3.91 | 0 |).01 | 59 | | | | | |
| | Co | ollect Sa | .mple | | \dashv | | <u> </u> | + | | | | | | | | |
| | | | | | + | | | + + | | | | | | | | |
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| EQUIPME | NT DOC | IMENTA | TION | | | | | | | | <u> </u> | | | | | |
| TYPE C | <u>DF PUMP</u> ED BLADDE MCO BLAD EOPUMP | ER | | HIGH | ON OR TE | EFLON LINED POLYETHYLEN ed) | E | POL | | | | | TEF | | ER MATERIA | — / Г |
| ANALYTIC To Be Collected | | AMETER | i S | | | | | RESERVATION ETHOD | | VOLUME REQUIRED | | SAMPLE COLLECTED | <u>)</u> | | | |
| SVC VPH Diss pH X Amm X Chl X Sul X Spe X Diss | WETHOD NUMBER | | | | 10B 0 H+B 06-1 | 4 D HC HN 4 D H23 4 D 4 D 4 D | CL / 4 DEG. C DEG. C DL / 4 DEG. C DEG. C DEG. C DEG. C DEG. C DEG. C DEG. C DEG. C | ;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;; | 3 X 40 mL 2 X 1 L AG 3 X 40 mL 1 X 500 mL 1 X 500 mL 1 X 250 mL 1 X 500 mL 1 X 500 mL 1 X 500 mL | | X Chlo | OCs H Fe monia-Nitroge oride fate ecific Conduct | | | | |
| PURGE WA CONTAINER NOTES | ATER RIZED | YES | NO | NUMBER O | ED | ~ 1.37 ga | <u>ıl.</u> | LOCATION | SKETC | и | | | | | | |
| SIGNATURE | | | | | | | | Prepared | l by: BEG d by: SAI l by: CTM | | | | ٧ | VO | 000 | J . |

| | | | UCTURE SOLUT W FLOW GF | , | TER SAI | MPLING | | | | | |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------------------------|------------------------------------------------------|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------|--------------------------------------------------------|--------------|
| PROJECT | OLIN CHEMICA | AL SUPERFUND S | SITE, WILMINGTON | , MA | WELI | L ID | MP-2#13 | | | ROUND |) NO. 2 |
| SAMPLE ID | | OC-MP2#1 | 3 | | SITE TY | YPE | Superfund | | | DATE | 5/18/2018 |
| TIME | START | 8:30 END | 9:05 | | JOB NUMBE | R | 6107180016 | | | BOTTLE TIME | 8:55 |
| QC SAI | EVEL / PUMP S MPLE CTED ID | SETTINGS N/A | TOP (| MENT POINT OF WELL RISER OF PROTECTIVE (:R | CASING | PROTECTIVE CASING STIC (FROM GROU | KUP | FT. | PROTE CASING DIFFER | à / WELL | A FT. |
| INITIAL DE TO WA | | N/A F | T. WELL DEF | PTH ~ 13.5 | | PID AMBIENT AIR | N/A | PPM | WELL DIAMET | ER multi-po | rt IN. |
| FINAL DE TO WA | | N/A F | T. SCREEN | | | PID WELL | | | WELL | YES | NO N/A |
| DRAWDO VOLU (final - i | JME | N/A GA ch} or x 0.65 {4-inc | | multi-port F DRAWDOWN VO TAL VOLUME PUR | DLUME | MOUTH PRESSURE TO PUMP | N/A | PPM |] INTEGF | CASING X | |
| TOTAL \ PUR(purge | GED | 0.94 GA r minute) x time du | AL. uration (minutes) x 0 | N/A .00026 gal/ml) | | REFILL TIMER SETTING | N/A | SEC. | DISCHA TIMER SETTIN | N/A | SEC. |
| PURGE D | ATA | | | | | | | | | | |
| TIME | DEPTH TO WATER (ft.) (0.3 ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. COND. (mS/cm) (3%) | pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | СОМ | MENTS |
| 8:35 | - | 145 | 12.95 | 1.47 | 6.55 | 11.97 | 0.01 | 100 | ~ 13.5 ft. | Multi- | port well |
| 8:40 8:45 | - | 145 145 | 12.93 12.93 | 1.49 1.50 | 6.48 6.44 | 9.60 8.95 | 1.6 2.6 | 125 138 | | | |
| 8:50 | - | 145 | 12.82 | 1.50 | 6.44 | 8.94 | 0.1 | 143 | | | |
| 8:55 | - | 145 | 12.76 | 1.51 | 6.44 | 8.91 | 0.1 | 147 | | | |
| | Collect | - 145 12.76 1.51 Collect Sample | | | | | | | | | |
| | | | | | | | | | | | |
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| TYPE C | NT DOCUMEN DE PUMP ED BLADDER MCO BLADDER EOPUMP | | TYPE OF TUBING TEFLON OR 1 X HIGH DENSIT LDPE (Dedica | Y POLYETHYLEN | Ē | POL STAI | PUMP MATERIAL YVINYL CHLORIDE NLESS STEEL CON (Dedicated) | | | TYPE OF BLADI | DER MATERIAL |
| ANALYTIC To Be Collecte | CAL PARAMET | ERS | | | | ESERVATION THOD | VOLUME REQUIRED | ! | SAMPLE COLLECTED | <u>)</u> | |
| SV/ VP Dis pH X Am X Chi X Sul X Sp | VOCs: Trimethylpentenes 8260 B SVOCs: NDPA and BEHP 8270 C VPH MA VPH Dissolved Fe DIS. 6010B PH SM 4500 H+B X Ammonia-Nitrogen 10-107-06-1 X Chloride 300.0 X Sulfate 300.0 Specific Conductivity SM 2510B X Dissolved Al, Cr DIS. 6010B RGE OBSERVATIONS | | | | 4 DE HCL HNC 4 DE H2S 4 DE 4 DE 4 DE | _/4 DEG. C EG. C _/4 DEG. C O3/4 DEG. C EG. C EG. C EG. C EG. C EG. C EG. C | 3 X 40 mL 2 X 1 L AG 3 X 40 mL 1 X 500 mL | | X Chl | OCs I Fe monia-Nitrogen oride fate ecific Conductivity | |
| PURGE O | | | NUMBER OF GALL | ONS | | LOCATION | SKETCH | | | | |
| CONTAINE | | | GENERATED | ~ 0.94 ga | l | | | | | | |
| NOTES | MP-2 #13 replaces GW-42S | | | | | Sampled Prepared Checked | by: SAI | | | W | ood. |
| SIGNATURI | E: Fiel | d Form w/ Signa | ature on File | | | | - | | | | |

| | | | | UCTURE SOL | - | :. Nater sa | MPLING | ì | | | |
|-------------------------------|------------------------------------------------------------|-------------|-------------------------------------|---------------------------|-----------------------------------------|------------------------|--------------------------------------|-----------------------------------|-------------------------------|---------------------------|---------------------------------|
| PROJECT | OLIN C | HEMICAL | SUPERFUND | SITE, WILMINGT | ON, MA | WE | ELL ID | PZ-16RRR | |] | ROUND NO. 2 |
| SAMPLE ID | | | OC-PZ-16RF | R. | | SITE - | TYPE | Superfund | | j | DATE 5/16/2018 |
| TIME | START | | 11:30 ENI | D 12:00 | | JOB NUME | BER | 6107180016 | | | BOTTLE TIME 11:50 |
| WATER LI | | PUMP SI | ETTINGS | | JREMENT POINT | | | | | | |
| | CTED ID | | N/A | X TC | OP OF WELL RIS OP OF PROTECT THER | | PROTECTIV CASING STI (FROM GRO | CKUP | FT. | PROTE CASING DIFFER | G / WELL |
| INITIAL DE | | 3 | .25 F | T. WELL (TOR) | DEPTH ~ (| 6 FT. | PID AMBIENT AI | R N/A | PPM | WELL DIAMET | TER 0.75 IN. |
| FINAL DE | | | Dry F | T. SCREE | | FT. | PID WELL MOUTH | N/A | PPM | WELL | YES NO N/A |
| DRAWDO VOLU (final - in | JME | | I/A G/ or x 0.65 {4-ind | AL. RATIC | O OF DRAWDOW TOTAL VOLUME | VN VOLUME | PRESSURE TO PUMP | | PSI |] | CASING X |
| TOTAL V | GED | | | AL. uration (minutes) | N/A x 0 00026 gal/ml | | REFILL TIMER SETTING | N/A | SEC. | DISCHA TIMER SETTIN | ARGE N/A SEC. |
| PURGE DA | | itero per i | milato, x time di | | - X 0.00020 gai/iii | ' | OE11IIIG | | | OLITIN | |
| TIME | DEPT WATE (0.3 | R (ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. CON (mS/cm) (3%) | D. pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | COMMENTS |
| 11:38 | | | | 14.75 | 1.16 | 9.65 | 8.00 | 164 | -50 | ~ 6 ft. | |
| | Well | | | Recharge | | | | | | | |
| 11:50 | (| Collect S | Sample | | | | | | | | |
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| l <u> </u> | NT DOC OF PUMP ED BLADE | | ATION | TYPE OF TUBIN | <u>NG</u> DR TEFLON LINE | :D | | F PUMP MATERIAL | Ī | | TYPE OF BLADDER MATERIAL TEFLON |
| | MCO BLA EOPUMP | DDER | | HIGH DEN | SITY POLYETHY dicated) | 'LENE | | AINLESS STEEL ICON (Dedicated) | | | OTHER |
| ANALYTIC To Be Collected | | RAMETE | RS | ME | THOD | PI | RESERVATION | I VOLUME | | SAMPLE | |
| TO Be Collected | u | | | | IMBER | | ETHOD | REQUIRED | <u>)</u> | COLLECTE | 2 |
| | Cs: Trime | | | | 60 B | | CL / 4 DEG. C DEG. C | 3 X 40 mL | | VO | |
| VPI | Н | | inr | MA | 70 C VPH | Н | CL / 4 DEG. C | 2 X 1 L AG 3 X 40 mL | | VPI | |
| Diss | solved Fe | • | | | S. 6010B 14500 H+B | | NO3 / 4 DEG. (DEG. C | 1 X 500 mL 1 X 500 mL | | Dis pH | |
| | monia-Nit | rogen | | | 107-06-1 | | 2SO4 / 4 DEG. DEG. C | C 1 X 250 mL 1 X 500 mL | | X Am | monia-Nitrogen |
| X Sul | | | | | | | DEG. C DEG. C | 1 X 500 mL | | X Sul | |
| _ = . | Specific Conductivity SM 2510B Dissolved AI, Cr DIS. 6010B | | | | | | DEG. C NO3 / 4 DEG. (| 1 X 500 mL 2 1 X 500 mL | | X Spe | ecific Conductivity Al. Cr |
| | | | | | | | | | | | ····, · |
| PURGE O | BSERV | ATIONS | | | | | LOCATION | N SKETCH | | | |
| PURGE WA | | YES | NO | NUMBER OF GA | | .1 gal. | | | | | |
| NOTES | Chloride | and Sulf | ate analysis coll | ected in one 500 | mL bottle | | | | | | |
| | | | nple recharge | | | | | | | | |
| | | | | | | | | | | | _ |
| | | | | | | | Sample | d by: BEG | | | wood. |
| | | | | | | | | d by: SAI | | | ****** |
| SIGNATURE | =. | Field | Form w/ Sign: | ature on File | | | Checked | by: CTM | | | |

| | | | | | UTIONS, INC. | | MPLING | | | | |
|------------------------------|------------------------------------------------------------|-------------|-------------------------------------|---------------------------|---------------------------------------------|------------------------------|--------------------------------------|------------------------------------------------|-------------------------------|---------------------------|------------------------------------------------------------------------|
| PROJECT | OLIN C | HEMICAL | . SUPERFUND S | SITE, WILMINGTO | ON, MA | WE | LL ID | PZ-17RRR | |] | ROUND NO. 2 |
| SAMPLE ID | | | OC-PZ17RF | | | SITE T | TYPE | Superfund | | | DATE 5/16/2018 |
| TIME | START | | 10:20 ENI | 10:45 | | JOB NUMB | ER | 6107180016 | | | BOTTLE TIME 10:30 |
| WATER L | | PUMP SI | ETTINGS | | REMENT POINT | | | | | | |
| | CTED ID | | N/A | Х ТО | OP OF WELL RISE OP OF PROTECTIVE THER | | PROTECTIV CASING STI (FROM GRC | CKUP | FT. | PROTE CASING DIFFER | A / WELL |
| INITIAL DE TO WA | | 2 | .08 F | T. WELL D | ○EPTH ~ 6.6 | 55 FT. | PID AMBIENT AII | R N/A | PPM | WELL DIAMET | TER 0.75 IN. |
| FINAL DE TO WA | | | Ory F | T. SCREE | | FT. | PID WELL MOUTH | N/A | PPM | WELL INTEGF | YES NO N/A RITY: CAP X |
| DRAWDO VOLU (final - i | JME | | V/A G/ } or x 0.65 {4-inc | AL. RATIO | OF DRAWDOWN | N VOLUME | PRESSURE TO PUMP | N/A | PSI |] | CASING X LOCKED X COLLAR X |
| TOTAL \ PUR(| GED | | D.1 G/ | | N/A x 0.00026 gal/ml) | | REFILL TIMER SETTING | N/A | SEC. | DISCHA TIMER SETTIN | N/A SEC. |
| PURGE D | | , | | | , | | | | | | * |
| TIME | DEPT WATE (0.3 | R (ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. COND. (mS/cm) (3%) |). pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | COMMENTS |
| 10:25 | | | | 15.55 | 0.692 | 11.04 | 4.25 | 139 | -160 | ~ 6.5 ft. | |
| | Well | | | Recharge | | + | | | | | |
| 10:30 | (| Collect S | Sample | | | | | | | | |
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| QE | DF PUMP ED BLADE MCO BLA | DER | ATION | HIGH DENS | — R TEFLON LINED SITY POLYETHYL | | PO STA | F PUMP MATERIAL LYVINYL CHLORIDE AINLESS STEEL | : | | TYPE OF BLADDER MATERIAL TEFLON OTHER |
| X GE | OPUMP | DAMETE | :DC | X LDPE (Dedi | icated) | | X SIL | ICON (Dedicated) | | | |
| To Be Collected | | AIVIETE | ino | | THOD <u>MBER</u> | | RESERVATION ETHOD | VOLUME REQUIRED | 1 | SAMPLE COLLECTED | 2 |
| | Cs: Trime | | | 826 | 60 B 70 C | | CL / 4 DEG. C DEG. C | 3 X 40 mL 2 X 1 L AG | | VO | Cs OCs |
| VPI | Н | | ERP | MA | VPH | НС | CL / 4 DEG. C | 3 X 40 mL | | VPI | н |
| Dis: | solved Fe | , | | | 6. 6010B 4500 H+B | | 103 / 4 DEG. (DEG. C | 1 X 500 mL 1 X 500 mL | | Dis pH | . Fe |
| | monia-Nit | rogen | | | 107-06-1 | | SO4 / 4 DEG. | C 1 X 250 mL | | | monia-Nitrogen |
| X Sul | | | | | | | DEG. C DEG. C | 1 X 500 mL 1 X 500 mL | | X Chl | |
| _ = ' | Specific Conductivity SM 2510B Dissolved AI, Cr DIS. 6010B | | | | | | DEG. C IO3 / 4 DEG. C | 1 X 500 mL 1 X 500 mL | | X Spe | ecific Conductivity |
| | 00.700 7 11, | | | 5.0 | . 00.02 | | .007 . 520. 0 | , , , , , , , , , , , , , , , , , , , | | | |
| PURGE O | BSERV | ATIONS | | | | | LOCATION | SKETCH | | | |
| PURGE WA | | YES | NO | NUMBER OF GA GENERATED | ALLONS ~ 0.1 | gal. | | | | | |
| NOTES | Chloride | and Sulf | ate analysis coll | ected in one 500r | nL bottle | | | | | | |
| | Well wer | nt dry; sar | mple recharge | | | | | | | | |
| | | | | | | | Sampleo | l by: BEG | | | waad |
| | | | | | | | Prepared | d by: SAI | | | wood. |
| SIGNIATI IRE | Ξ. | Fiold | Form w/ Signs | ature on File | | | Checked | l by: CTM | | | |

| | | & INFRASTRU CORD - LOV | | • | ATER SA | MPLING | | | | | |
|----------------------------|--------------------------------------------------|-------------------------------------|----------------------------|-----------------------------------------|---------------------------|-----------------------------------------|--------------------------------------------------------------------|-------------------------------|-----------------------------|----------------------------------|------------|
| PROJECT | OLIN CHEMICA | AL SUPERFUND SI | ITE, WILMINGTO | N, MA | WEL | L ID | PZ-18R | |] | ROUND N | O. 2 |
| SAMPLE ID | | OC-PZ-18R | | | SITE T | YPE | Superfund | |] | DATE 5/ | /16/2018 |
| TIME | START | 9:05 END | 9:38 | | JOB NUMB | ER | 6107180016 | | | BOTTLE TIME | 9:30 |
| QC SA | EVEL / PUMP S MPLE CTED ID | SETTINGS N/A | TOP | EMENT POINT OF WELL RISER OF PROTECTIVE | | PROTECTIVE CASING STIC (FROM GROU | KUP | FT. | PROTEC CASING DIFFERE | / WELL | FT. |
| INITIAL DE TO WA | | 1.80 FT | | | | PID | N/A | 2014 | WELL | | |
| FINAL DE | | 2.79 FT | (TOR) SCREEN | ~ 5.99 | FT. | AMBIENT AIR PID WELL | N/A | PPM | DIAMETE WELL | ER <u>1</u> YES | NO N/A |
| DRAWDO VOLU | JME | 0.04 GAI | | 1.6 OF DRAWDOWN OTAL VOLUME PU | | MOUTH PRESSURE TO PUMP | N/A | PPM |] INTEGRI | TY: CAP X CASING X LOCKED COLLAR | <u> </u> |
| TOTAL PUR | VOL. GED | 0.78 GAI | L. | 0.05 | SNGLD | REFILL TIMER SETTING | N/A | SEC. | DISCHAI TIMER SETTING | RGE N/A | SEC. |
| PURGE D | ATA | | | | | | | | | | |
| TIME | DEPTH TO WATER (ft.) (0.3 ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. COND. (mS/cm) (3%) | pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | COMMEI | NTS |
| 9:10 | 2.72 | 120 | 13.69 | 6.32 | 10.35 | 2.33 | 228 | -91 | ~ 5.5 ft. | | |
| 9:15 | 2.79 | 120 | 13.41 | 5.21 | 10.27 | 0.87 | 34.2 | -101 | | | |
| 9:20 9:25 | 2.79 2.79 | 120 120 | 13.36 13.54 | 4.96 4.95 | 9.97 | 0.49 0.45 | 18.7 18.3 | -89 -84 | | | |
| 9:30 | 2.79 | 120 | 13.53 | 4.94 | 9.97 | 0.44 | 17.9 | -81 | | | |
| | Collect | Sample | | | | | | | | | |
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| TYPE (| NT DOCUMEN DE PUMP ED BLADDER MCO BLADDER EOPUMP | | | - TEFLON LINED TY POLYETHYLE | NE | POL' | PUMP MATERIAL YVINYL CHLORIDE NLESS STEEL CON (Dedicated) | : | | TYPE OF BLADDE TEFLON OTHER | R MATERIAL |
| ANALYTIO To Be Collecte | CAL PARAMET | ERS | METI <u>NUM</u> | | | ESERVATION THOD | VOLUME REQUIRED | <u>!</u> | SAMPLE COLLECTED | | |
| vo | Cs: Trimethylpen | tenes | 8260 | В | НС | L / 4 DEG. C | 3 X 40 mL | | VOC |)s | |
| SV | OCs: NDPA and I | BEHP | 8270 MA V | | | EG. C L / 4 DEG. C | 2 X 1 L AG 3 X 40 mL | | SVO | | |
| Dis | solved Fe | | DIS. | 6010B | HN | O3 / 4 DEG. C | 1 X 500 mL | | Dis. | | |
| pH X Am | monia-Nitrogen | | | 500 H+B)7-06-1 | |)EG. C SO4 / 4 DEG. C | 1 X 500 mL 1 X 250 mL | | pH X Amn | nonia-Nitrogen | |
| X Ch | | | 300.0 300.0 | | | EG. C EG. C | 1 X 500 mL 1 X 500 mL | | X Chlo | | |
| X Sp | ecific Conductivity | 1 | | 510B | 4 D | EG. C | 1 X 500 mL | | X Spec | cific Conductivity | |
| X Dis | solved Al, Cr | | DIS. | 6010B | HN | O3 / 4 DEG. C | 1 X 500 mL | | X Dis. | Al, Cr | |
| | BSERVATION | | | | | LOCATION | SKETCH | | | | |
| PURGE WA | | | NUMBER OF GAL GENERATED | ~ 0.78 <u></u> | gal. | | | | | | |
| NOTES | Chloride and Su | ılfate analysis collec | cted in one 500m | L bottle | | | | | | | |
| | | | | | | Sampled | by: BEG | | | 146 | لہہ |
| | | | | | | Prepared | by: SAI | | | WO | od. |
| SIGNATUR | E: Fiel | d Form w/ Signat | ture on File | | | Checked | by: CTM | | | | |

| | | & INFRASTRU CORD - LOV | | • | | MPLING | | | | | |
|--------------------------|---------------------------------------------------|-------------------------------------|---------------------------|------------------------------------------------|------------------------------|------------------------------------------|-----------------------------------------------------------------------|-------------------------------|-----------------------------|------------------------------------|----------|
| PROJECT | OLIN CHEMICA | AL SUPERFUND S | ITE, WILMINGTO | N, MA | WE | LL ID | PZ-24 | |] | ROUND NO. | 2 |
| SAMPLE ID | | OC-PZ-24 | | | SITE T | ГҮРЕ | Superfund | |] | DATE 5/15/201 | 8 |
| TIME | START | 7:45 END | 8:30 | | JOB NUMB | BER | 6107180016 | |] | BOTTLE TIME 8:20 | |
| QC SAI | EVEL / PUMP S MPLE CTED ID | SETTINGS N/A | X TOF | EMENT POINT P OF WELL RISE P OF PROTECTI | | PROTECTIVE CASING STIC (FROM GRO | KUP | FT. | PROTEC CASING DIFFERE | / WELL | |
| INITIAL DE TO WA | | 8.35 FT | | | | PID | | | WELL | | _ |
| FINAL DE | | 8.49 FT | (TOR) SCREEN | ~ 17. | 65 FT. | AMBIENT AIF | N/A | PPM | DIAMETE WELL | ER 1.5 IN. YES NO | N/A |
| DRAWDO VOLU | | 0.01 GA | LENGTH | 10 OF DRAWDOW | FT. | MOUTH PRESSURE | N/A | PPM | INTEGRI | TY: CAP X CASING X LOCKED X | _ |
| | | th} or x 0.65 {4-inch | | OTAL VOLUME | | TO PUMP | N/A | PSI |] | COLLAR X | _ |
| TOTAL \ PUR((purge | GED | 1.23 GA minute) x time du | | <0.01 0.00026 gal/ml) | | REFILL TIMER SETTING | N/A | SEC. | DISCHAI TIMER SETTING | N/A SEC. | .] |
| PURGE D | | | | | | | | | | | |
| TIME | DEPTH TO WATER (ft.) (0.3 ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. COND (mS/cm) (3%) |). pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | COMMENTS | |
| 7:50 | 8.49 | 135 | 17.82 | 1.41 | 8.36 | 1.17 | 72.9 | 1 | ~ 16 ft. | | |
| 7:55 | 8.49 | 135 | 16.74 | 1.40 | 8.59 | 0.77 | 57.5 | -15 | | | |
| 8:00 | 8.49 | 135 | 16.33 | 1.39 | 8.65 | 0.76 | 56.4 | -22 -42 | | | |
| 8:05 8:10 | 8.49 8.49 | 135 135 | 14.87 14.65 | 1.43 1.45 | 9.06 9.13 | 0.52 | 33.1 29.2 | -42 | | | |
| 8:15 | 8.49 | 135 | 14.39 | 1.46 | 9.19 | 0.28 | 28.3 | -49 | | | |
| 8:20 | 8.49 | 135 | 14.41 | 1.46 | 9.18 | 0.23 | 28.1 | -51 | | | |
| | Collect | Sample | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| TYPE C | NT DOCUMEN' DE PUMP ED BLADDER MCO BLADDER EOPUMP | : [<u>[</u> | | - TEFLON LINED TY POLYETHY | | POL | F PUMP MATERIAL YVINYL CHLORIDE INLESS STEEL CON (Dedicated) | = | | TYPE OF BLADDER MATEI TEFLON OTHER | RIAL |
| ANALYTION To Be Collecte | CAL PARAMET | ERS | MET | HOD | PF | RESERVATION | VOLUME | | SAMPLE | | |
| | | | | IBER . | | <u>ETHOD</u> | REQUIRED | <u>)</u> | COLLECTED | | |
| SV | | | 8260 8270 MA \ | C /PH | 4 E HC | DL / 4 DEG. C DEG. C DL / 4 DEG. C | 3 X 40 mL 2 X 1 L AG 3 X 40 mL | | VOC SVO VPH | OCs | |
| Dis DH | solved Fe | | | 6010B I500 H+B | | NO3 / 4 DEG. C DEG. C | 1 X 500 mL 1 X 500 mL | | Dis. | Fe | |
| X Am | monia-Nitrogen | | 10-1 300. | 07-06-1 n | | 2SO4 / 4 DEG. (DEG. C | 1 X 250 mL 1 X 500 mL | | X Amn | nonia-Nitrogen | |
| X Sul | | | 300. | | | DEG. C | 1 X 500 mL | | X Sulfa | | |
| | ecific Conductivity solved Al, Cr | , | | 2510B 6010B | | DEG. C NO3 / 4 DEG. C | 1 X 500 mL 1 X 500 mL | | X Spec | cific Conductivity Al. Cr | |
| | ŕ | | | | | | | | <u></u> | | |
| PURGE WA | | | NUMBER OF GA | | | LOCATION | SKETCH | | | | |
| CONTAINE | • | NO (| GENERATED | | 3 gal | | | | | | |
| | Smoride and Su | ac araiyəis colle | | _ 501116 | | | | | | | |
| | | | | | | Sampled | • | | | woo | d |
| | | | | | | Prepared Checked | | | | ***** | — |
| SIGNATURI | E: Fiel | d Form w/ Signa | ture on File | | | Gridoneu | _,. U | | | | |

| | | & INFRASTRU CORD - LOV | | • | ATER SA | MPLING | | | | |
|----------------------------|--------------------------------------------------|-------------------------------------|---------------------------|----------------------------------------|---------------------------|-----------------------------------------|-----------------------------------------------------------|-------------------------------|-----------------------------|------------------------------------------------------|
| PROJECT | OLIN CHEMICAL SUPERFUND SITE, WILMINGTON, MA | | | N, MA | WELL ID PZ-25 | | |] | ROUND NO. 2 | |
| SAMPLE ID | | OC-PZ-25 | | | SITE T | YPE | Superfund | | | DATE 5/15/2018 |
| TIME | START | 8:30 END | 9:05 | | JOB NUMB | ER | 6107180016 | | | BOTTLE TIME 8:55 |
| QC SAI | EVEL / PUMP S MPLE CTED ID | SETTINGS N/A | X TOP | EMENT POINT OF WELL RISER OF PROTECTIV | | PROTECTIVE CASING STIC (FROM GROU | KUP | FT. | PROTEC CASING DIFFERE | / WELL |
| INITIAL DE TO WA | | 8.06 FT | | | | PID | | | WELL | |
| FINAL DE TO WA | | 8.13 FT | (TOR) SCREEN | ~ 17.7 | 5 FT. | AMBIENT AIR | N/A | PPM | DIAMETE WELL | ER 1.5 IN. YES NO N/A |
| DRAWDO VOLU | JME - | <0.01 GAI | | 10 OF DRAWDOWN | | MOUTH PRESSURE | N/A | PPM | INTEGRI | TY: CAP X CASING X |
| TOTAL V | /OL. | 0.98 GAL | | <0.01 | URGED | TO PUMP REFILL TIMER | N/A | PSI SEC. | DISCHAF TIMER | N/A SEC. |
| (purge | | r minute) x time dur | ration (minutes) x | 0.00026 gai/ml) | | SETTING | | | SETTING | i |
| TIME | DEPTH TO WATER (ft.) (0.3 ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. COND. (mS/cm) (3%) | pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | COMMENTS |
| 8:35 | 8.13 | 150 | 14.63 | 1.18 | 9.30 | 3.45 | 4.7 | -17 | ~ 15 ft. | |
| 8:40 | 8.13 | 150 | 14.30 | 1.17 | 9.03 | 2.14 | 4.8 | 19 | | |
| 8:45 8:50 | 8.13 8.13 | 150 150 | 13.73 13.57 | 1.18 1.19 | 8.94 8.90 | 1.89 2.25 | 4.6 4.9 | 25 27 | | |
| 8:55 | 8.13 | 150 | 13.50 | 1.19 | 8.84 | 2.06 | 4.7 | 28 | | |
| | Collect | Sample | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| TYPE C | NT DOCUMEN DE PUMP ED BLADDER MCO BLADDER EOPUMP |] [<u></u> | | - TEFLON LINED TY POLYETHYLE | ENE | POL' | PUMP MATERIAL YVINYL CHLORIDE NLESS STEEL CON (Dedicated) | : | | TYPE OF BLADDER MATERIAL TEFLON OTHER |
| ANALYTIC To Be Collecte | CAL PARAMET | ERS | METI <u>NUM</u> | | | RESERVATION ETHOD | VOLUME REQUIRED | 1 | SAMPLE COLLECTED | |
| Vo | Cs: Trimethylpen | tenes | 8260 | В | НС | CL / 4 DEG. C | 3 X 40 mL | | VOC | s |
| SV | OCs: NDPA and I | BEHP | 8270 MA V | | | DEG. C CL / 4 DEG. C | 2 X 1 L AG 3 X 40 mL | | SVO | |
| Dis | solved Fe | | DIS. | 6010B | HN | HNO3 / 4 DEG. C 1 X 500 mL | | | Dis. I | |
| DH X Am | monia-Nitrogen | | | 500 H+B 07-06-1 | | DEG. C SO4 / 4 DEG. C | 1 X 500 mL 1 X 250 mL | | pH X Amm | nonia-Nitrogen |
| X Chi | | | 300.0 300.0 | | | DEG. C DEG. C | 1 X 500 mL 1 X 500 mL | | X Chlo | |
| X Spe | ecific Conductivity | , | SM 2 | 510B | 4 🗅 | DEG. C | 1 X 500 mL | | X Spec | cific Conductivity |
| X Dis | solved Al, Cr | | DIS. | 6010B | HN | IO3 / 4 DEG. C | 1 X 500 mL | | X Dis. | Al, Cr |
| PURGE O | BSERVATION: | | NUMBER OF GAL | LONS | | LOCATION | SKETCH | | | |
| CONTAINE | | | GENERATED | ~ 0.98 | gal. | | | | | |
| NOTES | Chloride and Su | lfate analysis collec | cted in one 500m | L bottle | | | | | | |
| | | | | | | Sampled Prepared | | | | wood |
| SIGNATURI | . | d Form/ 0' | huro on Ell- | | | Checked | | | | |
| aigina LURI | =. Fiel | d Form w/ Signat | ure on File | | 1 | | | | | |

| | | & INFRASTRU CORD - LOV | | ITIONS, INC. | ATER SAI | MPLING | | | | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|-------------------------------------|------------------------------------------|------------------------------------------------|-------------------------------------------------------------------|-----------------------------------------|-----------------------------------------------------------|-------------------------------|-------------------------------------------|-------------------------------------------------------------------------------------------------------------|------------|
| PROJECT | OLIN CHEMICAL SUPERFUND SITE, WILMINGTON, MA | | | N, MA | WELL ID GW-16R | | | | ROUND NO | D. 2 | |
| SAMPLE ID | | OC-GW-16F | 3 | | SITE T | YPE | Superfund | | | DATE 5/2 | 21/2018 |
| TIME | START | 8:00 END | 9:10 | | JOB NUMBE | ER | 6107180016 | |] | BOTTLE TIME | 8:40 |
| QC SAN | EVEL / PUMP \$ MPLE CTED ID | SETTINGS N/A | X TOF | REMENT POINT P OF WELL RISER OF PROTECTIVE HER | | PROTECTIVE CASING STIC (FROM GROU | KUP | FT. | PROTEC CASING DIFFERI | / WELL | FT. |
| INITIAL DEI | | 10.60 F1 | | | | PID | | | WELL | | |
| FINAL DEI | | 11.14 F7 | (TOR) T. SCREEN | ~ 17.2 | FT. | AMBIENT AIR | N/A | PPM | DIAMETI WELL | ER 2 YES | NO N/A |
| DRAWDO VOLU (final - ir | ME | 0.08 GA | | 5 OF DRAWDOWN VOTAL VOLUME PU | | MOUTH PRESSURE TO PUMP | N/A | PPM | INTEGR | ITY: CAP X CASING X LOCKED X COLLAR X | = = |
| TOTAL V | /OL. | 1.66 GA | NL. | 0.05 | MOLD | REFILL TIMER SETTING | N/A | SEC. | DISCHAI TIMER SETTING | RGE N/A | SEC. |
| PURGE DA | ATA | | | | | | | | | | |
| TIME | DEPTH TO WATER (ft.) (0.3 ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. COND. (mS/cm) (3%) | pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | COMMEN | ITS |
| 8:10 | 11.07 | 170 | 19.99 | 0.247 | 7.37 | 2.21 | 164 | 82 | ~ 16 ft. | | |
| 8:15 | 11.14 | 160 | 16.42 | 0.171 | 9.32 | 0.31 | 193 | -1 | | | |
| 8:20 8:25 | 11.14 | 160 160 | 16.13 15.88 | 0.164 0.167 | 9.39 | 0.23 | 236 228 | -1 -3 | | | |
| 8:30 | 11.14 | 160 | 15.81 | 0.167 | 9.58 9.40 | 0.03 | 228 | -3 -5 | | | |
| 8:35 | 11.14 | 160 | 15.75 | 0.164 | 9.39 | 0.01 | 228 | -4 | | | |
| 8:40 | 11.14 | 160 | 15.71 | 0.164 | 9.37 | 0.01 | 228 | -4 | | | |
| | Collect | Sample | | | | | | | | | |
| | | | | | - | | | | | | |
| | | | | | + | | | | | | |
| | | | | | 1 | | | | | | |
| TYPE O | NT DOCUMEN' OF PUMP OF BLADDER OF BLADDER OF BLADDER OF BLADDER OF BLADDER | | | TEFLON LINED | NE | POL STA | PUMP MATERIAL YVINYL CHLORIDE NLESS STEEL CON (Dedicated) | | | TYPE OF BLADDEF TEFLON OTHER | R MATERIAL |
| ANALYTIC To Be Collected | CAL PARAMET | ERS | MET NUN | | | ESERVATION THOD | VOLUME REQUIRED | | SAMPLE COLLECTED | | |
| | Cs: Trimethylpen | | 8260 | В | HCI | L / 4 DEG. C | 3 X 40 mL | | X VOC | Os | |
| X SVOCs: NDPA and BEHP 8270 C X VPH MA VPH X Dissolved Fe DIS. 6010l X pH SM 4500 h X Ammonia-Nitrogen 10-107-06 Chloride 300.0 Sulfate 300.0 | | | /PH 6010B I500 H+B 07-06-1 0 | HCI HN0 4 D H2S 4 D 4 D | EG. C L / 4 DEG. C O3 / 4 DEG. C EG. C EG. C EG. C | 1 X 500 mL 1 X 500 mL | | Chlo | l Fe nonia-Nitrogen oride ate | | |
| _ = . | ecific Conductivity solved AI, Cr | , | | 2510B 6010B | | EG. C 03 / 4 DEG. C | 1 X 500 mL 1 X 500 mL | | | cific Conductivity Al, Cr | |
| PURGE WA | | _ | NUMBER OF GA | | | LOCATION | SKETCH | | | | |
| NOTES | RIZED YES | NO | GENERATED | <u>~ 1.66 ç</u> | yai. | | | | | | |
| SIGNATURE | : Fiel | d Form w/ Signa | iture on File | | | Sampled Prepared Checked | by: SAI | | | wo | od. |

| WOOD ENVIRONMENT & I | NFRASTRUCTURE SOLUT | IONS, INC. | | | | PAGE 1 OF 1 |
|--------------------------------------------|--------------------------|------------------------------------------------|-------------------------------------|--------------------------|---------------------|-------------------------------------|
| FIELD DATA RECO | RD - SURFACE WAT | ER | | | | |
| PROJECT OLIN CHEMICAL S | UPERFUND SITE, WILMINGT | ON, MA JOB N | UMBER 6 | 6107180016 | DA | TE 5/22/2018 |
| FIELD SAMPLE ID | OC-SW-ISCO2 | ACTIVITY TIME | START 8:20 | END | 8:35 BC | TTLE TIME 8:25 |
| QC SAMPLES COLLECTED | N/A | | | | | |
| SURFACE WATER DATA | | | EQUIPMENT USED | TYPE | OF SURFACE WAT | ER |
| WATER DEPTH | SPEC. COND | | BEAKER | Х | STREAM/ DITCH | DECON FLUIDS USED: |
| AT LOCATION 0.33 | | 0.822 mS/cm | PACS BOMB | | LAKE/ POND | DI WATER |
| DEPTH OF SAMPLE FROM SURFACE | 0.17 ft. D.O. 5.4 | 11 mg/L | X PERISTALTIC P | UMP | SEEP | POTABLE WATER |
| TEMPERATURE 18.12 | SALINITY DEG C | % | X FILTER (0.45 m | nicron) | MARSH | NONE |
| TURBIDITY | ORP | ~ | X LDPE Tubing & | Silicon | OTHER South Ditc | ch |
| 88.1 | NTU | 108 mV | | | | |
| pH 7.09 | UNITS | | Notes: Location pric | or to discharge into | the East Ditch | |
| SEDIMENT DATA | | | | | | |
| SEDIMENT SAMPLE START DEPTH | TYPE OF SEDIMENT | | EQUIPMENT FOR COLLECTION | ON DECON FLUI | IDS USED | |
| END DEPTH | ORGA | NIC | HAND AUGER | DI WATI | ER | |
| TYPE OF SAMPLE GRAB | SAND | | S.S. SPOON | POTABL | LE WATER | |
| SAMPLE OBSERVATIONS | GRAVI | EL | ALUMINIUM PAN | LIQUINO | ΟX | |
| ODOR | CLAY | | DREDGE | OTHER | | _ |
| COLOR | OTHE | 3 | OTHER | | | |
| FLOC OBSERVED | CLEAR OF LEAF | LITTER | <u> </u> | | | |
| ANALYTICAL PARAMETERS SURFACE WATER | METHOD | ı | PRESERVATION | VOLUME | SAMPLE | |
| | NUMBEF | | | | COLLECTED | |
| X Ammonia-Nitrogen X Nitrate / Nitrite | <u>10-107-0</u> 300.0 | <u>N</u> N | | 1 X 250 mL 1 X 500 mL | _ <u> X </u> _ X | |
| X Chloride | 300.0 | N | | 1 X 500 mL | Х | |
| X Sulfate | 300.0 | N | | 1 X 500 mL | X | |
| X Specific Conductivity X Total AI, Cr, Na | SM 2510I Total 601 | | | 1 X 500 mL 1 X 500 mL | _ X | |
| X Dissolved Al, Cr, Na | DIS. 6010 | | | 1 X 500 mL | X | |
| | <u> </u> | | | | _ 🗒 | |
| ANALYTICAL PARAMETERS | | | DDE0EDVATION. | VOLUME | OAMBI E | |
| SEDIMENT | METH(<u>NUMB</u> | | PRESERVATION <u>METHOD</u> <u>F</u> | VOLUME REQUIRED | SAMPLE COLLECTED | |
| % Solids / Moisture | 160.3 | | | 1 X 8 oz. | - 片 | |
| Total Al, Cr, Fe | Total 601 | <u>nr </u> | 4 DEG. C | 1 X 8 oz. | - H | |
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| NOTES | | | | = | ا ـ ـ ـ ـ ـ ـ | |
| | | | | W | ood. | |
| SIGNATURE: Field Fo | orm w/ Signature on File | | | | | |
| | 9 | | | | | Sampled by: BEG Prepared by: SAI |
| | | | | | | Checked by: CTM |

| | INFRASTRUCTURE SOLUT | | | | | PAGE 1 OF 1 |
|--------------------------------------------|-------------------------------|---------------|--------------------------|--------------------------------|-----------------------|-------------------------------------|
| FIELD DATA RECO | RD - SURFACE WAT | ER | | | | |
| PROJECT OLIN CHEMICAL S | SUPERFUND SITE, WILMINGT | ON, MA JOB N | UMBER 6 | 6107180016 | DAT | TE 5/22/2018 |
| FIELD SAMPLE ID | OC-SW-ISCO3 | ACTIVITY TIME | START 8:00 | END 8 | B:15 BO | TTLE TIME 8:05 |
| QC SAMPLES COLLECTED | N/A | | | | | |
| SURFACE WATER DATA | | | EQUIPMENT USED | TYPE C | F SURFACE WATE | :R |
| WATER DEPTH | SPEC. COND | | BEAKER | X | STREAM/ DITCH | DECON FLUIDS USED: |
| AT LOCATION 0.3 | 3 ft. | 0.342 mS/cm | PACS BOMB | | LAKE/ POND | DI WATER |
| DEPTH OF SAMPLE FROM SURFACE | 0.17 ft. D.O. 8. | 78 mg/L | X PERISTALTIC P | UMP | SEEP | POTABLE WATER |
| TEMPERATURE 20.39 | SALINITY DEG C | % | X FILTER (0.45 m | nicron) | MARSH | NONE |
| TURBIDITY | ORP | ~ | X LDPE Tubing & | Silicon | OTHER East Ditch | |
| 13.2 | NTU | 98 mV | | | | |
| рН 5.81 | UNITS | | Notes: East Ditch; U | Jp-stream of South I | Ditch confluence; Alc | ong Railway |
| SEDIMENT DATA | | | | | | |
| SEDIMENT SAMPLE START DEPT | H TYPE OF SEDIMENT | | EQUIPMENT FOR COLLECTION | ON DECON FLUID | S USED | |
| END DEPTH | ORGA | NIC | HAND AUGER | DI WATEI | R | |
| TYPE OF SAMPLE GRAB | SAND | | S.S. SPOON | POTABLE | WATER | |
| SAMPLE OBSERVATIONS | GRAVI | EL | ALUMINIUM PAN | LIQUINO | < | |
| ODOR | CLAY | | DREDGE | OTHER_ | | - |
| COLOR | OTHE | R | OTHER | | | |
| FLOC OBSERVED | CLEAR OF LEAF | LITTER | <u></u> | | | |
| ANALYTICAL PARAMETERS | | | | | | |
| SURFACE WATER | METHOD <u>NUMBE</u> F | | PRESERVATION METHOD | VOLUME REQUIRED (| SAMPLE COLLECTED | |
| X Ammonia-Nitrogen | 10-107-0 | | | 1 X 250 mL | X | |
| X Nitrate / Nitrite X Chloride | <u>300.0</u> 300.0 | NN | | 1 X 500 mL 1 X 500 mL | X | |
| X Sulfate | 300.0 | N | | 1 X 500 mL | X | |
| X Specific Conductivity | SM 2510I | | | 1 X 500 mL | X | |
| X Total Al, Cr, Na X Dissolved Al, Cr, Na | <u>Total 601</u> DIS. 6010 | | | 1 X 500 mL 1 X 500 mL | X | |
| A Dissolved Ai, Oi, Iva | DIO. 0010 | | THOOT 4 DEG. 0 | T X 300 IIIE | | |
| | | | | | | |
| ANALYTICAL PARAMETERS SEDIMENT | METHO | | PRESERVATION | VOLUME | SAMPLE | |
| % Solids / Moisture | <u>NUMB</u> 160.3 | <u> </u> | | REQUIRED <u>(</u> 1 X 8 oz. | COLLECTED | |
| Total Al, Cr, Fe | Total 601 | 0B | | 1 X 8 oz. | | |
| | | <u></u> | | | | |
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| l | | <u>—</u> | | | H | |
| | | <u> </u> | | | | |
| NOTES | | | | | _ | |
| | | | | W | ood. | |
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| SIGNATURE: Field F | orm w/ Signature on File | | | | | Sampled by: BEG |
| | | | | | | Prepared by: SAI Checked by: CTM |

| WOOD ENVIRONMENT & | INFRASTRUCTURE SOLU | TIONS, INC. | | | PAGE 1 OF 1 | | | | |
|--------------------------------------------|--------------------------|-------------------|------------------------------|-------------------|--------------------------------------------------------|--|--|--|--|
| FIELD DATA RECORD - SURFACE WATER | | | | | | | | | |
| PROJECT OLIN CHEMICAL S | SUPERFUND SITE, WILMING | ON, MA JOB NUMBE | ER 61 | 07180016 | DATE 5/22/2018 | | | | |
| FIELD SAMPLE ID | OC-SW-PZ16RRR | ACTIVITY TIME STA | ART 8:45 | END 9:00 | BOTTLE TIME 8:50 | | | | |
| QC SAMPLES COLLECTED | N/A | | | | | | | | |
| SURFACE WATER DATA | | | EQUIPMENT USED | TYPE OF SURFACE | E WATER | | | | |
| WATER DEPTH AT LOCATION 0.4 | SPEC. COND 2 ft. | 0.913 mS/cm | BEAKER | X STREAM/ D | | | | | |
| DEPTH OF SAMPLE FROM SURFACE | 0.17 ft. D.O. 9 | 68 mg/L | PACS BOMB X PERISTALTIC PUN | LAKE/ PON∣ MP | D DI WATER POTABLE WATER | | | | |
| TEMPERATURE 17.07 | SALINITY DEG C | % | X FILTER (0.45 micr | ron) MARSH | NONE | | | | |
| TURBIDITY 3.8 | ORP NTU | | X LDPE Tubing & Sill | icon X OTHER So | uth Ditch | | | | |
| рН 7.85 | UNITS | | Notes: At location PZ- | 16RRR | | | | | |
| SEDIMENT DATA | | | | | | | | | |
| SEDIMENT SAMPLE START DEPT | H TYPE OF SEDIMEN | FQU | JIPMENT FOR COLLECTION | DECON FLUIDS USED | | | | | |
| END DEPTH | ORG | NIC | HAND AUGER | DI WATER | | | | | |
| TYPE OF SAMPLE GRAB | SANI | | S.S. SPOON | POTABLE WATER | | | | | |
| SAMPLE OBSERVATIONS | GRA | EL | ALUMINIUM PAN | LIQUINOX | | | | | |
| ODOR | CLAY | | DREDGE | OTHER | | | | | |
| COLOR | ОТН | R | OTHER | _ | | | | | |
| FLOC OBSERVED | CLEAR OF LEA | LITTER | | | | | | | |
| ANALYTICAL PARAMETERS SURFACE WATER |) METHO |) DDI | ESERVATION V | OLUME SAMPLE | | | | | |
| SURFACE WATER | NUMBE | | | QUIRED COLLECTED | 1 | | | | |
| X Ammonia-Nitrogen | 10-107- | | | (250 mL X | | | | | |
| X Nitrate / Nitrite X Chloride | 300.0 300.0 | | | X 500 mL X X | | | | | |
| X Sulfate | 300.0 | | | 500 mL X | | | | | |
| X Specific Conductivity X Total Al. Cr. Na | SM 2510 | | | (500 mL X | | | | | |
| X Total Al, Cr, Na Dissolved Al, Cr, Na | Total 60 DIS. 601 | | | (500 mL X X | | | | | |
| <u> </u> | <u> </u> | | - T | X X | | | | | |
| | | | | | | | | | |
| ANALYTICAL PARAMETERS SEDIMENT | ; METH | OD PR | RESERVATION V | OLUME SAMPLE | | | | | |
| | <u>NUMI</u> | <u>ER</u> | METHOD RE | QUIRED COLLECTED | <u>)</u> | | | | |
| % Solids / Moisture Total Al, Cr, Fe | 160.3 Total 60 | | | (8 oz. | | | | | |
| Total Al, OI, Fe | Total 60 | <u>4D</u> | <u> 17</u> | (8 oz. | | | | | |
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| NOTES | | | | WOO | d. | | | | |
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| SIGNATURE: Field F | orm w/ Signature on File | | | | Carrolla Alica DEC | | | | |
| | | | | | Sampled by: BEG Prepared by: SAI Checked by: CTM | | | | |

| WOOD ENVIRONMENT & INFRAS | TRUCTURE SOLUTIONS | S, INC. | | | PAGE 1 OF 1 |
|-----------------------------------|-------------------------|-------------------------------------|-----------------------|-------------------------------|--------------------------------------------------------|
| FIELD DATA RECORD - S | SURFACE WATER | | | | |
| PROJECT OLIN CHEMICAL SUPERFU | JND SITE, WILMINGTON, I | MA JOB NUMBER | R 61 | 107180016 | DATE 5/22/2018 |
| FIELD SAMPLE ID OC | C-SW-PZ17RRR | ACTIVITY TIME STAR | RT 9:05 | END 9:20 | BOTTLE TIME 9:10 |
| QC SAMPLES COLLECTED | N/A | | | | |
| SURFACE WATER DATA | | E | QUIPMENT USED | TYPE OF SURF | ACE WATER |
| WATER DEPTH | SPEC. COND | | BEAKER | | M/ DITCH DECON FLUIDS USED: |
| AT LOCATION 0.42 | ft. (| 0.506 mS/cm | PACS BOMB | LAKE/ P | OND DI WATER |
| DEPTH OF SAMPLE FROM SURFACE 0.17 | D.O. ft. 7.08 | mg/L | PERISTALTIC PU | MP SEEP | POTABLE WATER |
| TEMPERATURE 17.30 DEG C | SALINITY | % | FILTER (0.45 mic | eron) MARSH | NONE |
| TURBIDITY TURBIDITY | ORP | | C LDPE Tubing & Si | licon X OTHER | South Ditch |
| 14.0 NTU | 83 | mV | | | |
| рН 9.03 UNITS | | N | otes: At location PZ- | -17RRR | |
| SEDIMENT DATA | <u>_</u> | | | | |
| SEDIMENT SAMPLE START DEPTH | TYPE OF SEDIMENT | EQUIP | MENT FOR COLLECTION | DECON FLUIDS USED | |
| END DEPTH | ORGANIC | HA | AND AUGER | DI WATER | |
| TYPE OF SAMPLE GRAB | SAND | 一 | S. SPOON | POTABLE WATER | |
| SAMPLE OBSERVATIONS | GRAVEL | | LUMINIUM PAN | LIQUINOX | |
| ODOR | CLAY | | REDGE | OTHER | |
| COLOR FLOC OBSERVED | LJOTHER | | THER | | |
| ANALYTICAL PARAMETERS | | | | | |
| SURFACE WATER | METHOD <u>NUMBER</u> | PRES <u>FILTERED</u> <u>METH</u> | | OLUME SAMPL EQUIRED COLLEC | |
| X Ammonia-Nitrogen | 10-107-06-1 | N H2SC | 04 / 4 DEG. C 12 | X 250 mL X | |
| X Nitrate / Nitrite X Chloride | 300.0 300.0 | N 4 DEC | | X 500 mL X X | |
| X Sulfate | 300.0 | N 4 DEC | | X 500 mL X | |
| X Specific Conductivity | SM 2510B | N 4 DEC | G. C 13 | X 500 mL X | |
| X Total Al, Cr, Na | Total 6010B | | | X 500 mL X | |
| X Dissolved Al, Cr, Na | DIS. 6010B | Y HNO3 | 3 / 4 DEG. C 12 | X 500 mL X | |
| | | | | | |
| ANALYTICAL PARAMETERS SEDIMENT | METHOD | PRE: | SERVATION V | OLUME SAMPL | |
| % Solids / Moisture | <u>NUMBER</u> 160.3 | <u>N</u> 4 DEC | | EQUIRED COLLECT | <u>TED</u> |
| Total Al, Cr, Fe | Total 6010B | 4 DEC | | X 8 oz. | |
| | | | | | |
| | | | | | |
| □ | | | | | |
| I □ | | | | | |
| NOTES | | | | | |
| NOTES | | | | Woo | Nd. |
| | | | | **** | |
| SIGNATURE: Field Form w/ Sig | gnature on File | | | | |
| | | | | | Sampled by: BEG Prepared by: SAI Checked by: CTM |

| WOOD ENVIRONMENT & | INFRASTRUCTURE SO | DLUTIONS, INC. | | | | | PAGE 1 OF 1 |
|--------------------------------------------|--------------------------|-------------------|---------------------------|-------------------|----------------------|---------------|----------------------------------|
| FIELD DATA RECO | RD - SURFACE V | VATER | | | | | |
| PROJECT OLIN CHEMICAL S | SUPERFUND SITE, WILM | INGTON, MA | JOB NUMBER | 61 | 07180016 | | DATE 5/22/2018 |
| FIELD SAMPLE ID | OC-SW-PZ18R | ACTIVITY T | IME START | 9:45 | END 1 | 10:20 E | SOTTLE TIME 9:50 |
| QC SAMPLES COLLECTED | DUP/MS/MSD | | | | | | |
| SURFACE WATER DATA | | | EQUI | PMENT USED | TYPE (| OF SURFACE WA | TER |
| WATER DEPTH | SPEC. CO | | | EAKER | X | STREAM/ DITCH | DECON FLUIDS USED: |
| AT LOCATION 0.6 DEPTH OF SAMPLE | 7 ft. D.O. | 0.829 | mS/cm P | ACS BOMB | | LAKE/ POND | DI WATER |
| FROM SURFACE | 0.33 ft. | 4.11 mg/L | X PI | ERISTALTIC PUN | MP | SEEP | POTABLE WATER |
| TEMPERATURE 14.99 | SALINITY DEG C | % | _ | LTER (0.45 micr | | MARSH | NONE |
| TURBIDITY 8.2 | ORP | 79 mV | <u> </u> | OPE Tubing & Sili | icon X | OTHER: Weir A | rea |
| | NTU | 79 mV | Notes | . At leasting D7 | 40D | | |
| рН 9.01 | UNITS | | Notes | : At location PZ- | 18H | | |
| SEDIMENT DATA | | | | | | | |
| SEDIMENT SAMPLE START DEPT END DEPTH | H TYPE OF SEI | DIMENT ORGANIC | EQUIPMENT HAND A | FOR COLLECTION | DECON FLUI | | |
| TYPE OF SAMPLE GRAB | | SAND | S.S. SF | | 一 | E WATER | |
| SAMPLE OBSERVATIONS | | GRAVEL | 一 | NIUM PAN | LIQUINO | | |
| ODOR | _ | CLAY | DREDO | βE | OTHER | | |
| COLOR | | OTHER | OTHER | | _ | | |
| FLOC OBSERVED | CLEAR OF | LEAF LITTER | | | | | |
| ANALYTICAL PARAMETERS SURFACE WATER | | THOD | PRESER | /ATION V/ | OLUME | SAMPLE | |
| SURFACE WATER | | | ERED METHOD | | | COLLECTED | |
| X Ammonia-Nitrogen X Nitrate / Nitrite | | | N H2SO4 / 4 N 4 DEG. C | | (250 mL | X | |
| X Nitrate / Nitrite Chloride | <u>300</u> 300 | | N 4 DEG. C | | (500 mL (500 mL | X | |
| X Sulfate | 300 | | 4 DEG. C | 1 > | (500 mL | X | |
| X Specific Conductivity X Total Al, Cr, Na | | | 4 DEG. C | | (500 mL | - X X | |
| X Total Al, Cr, Na Dissolved Al, Cr, Na | | | M HNO3 / 4 Y HNO3 / 4 | | (500 mL (500 mL | - X | |
| <u> </u> | | | | <u> </u> | (OOO III L | | |
| | _ | | | | | | |
| ANALYTICAL PARAMETERS SEDIMENT | 1 | METHOD | PRESER | | OLUME | SAMPLE | |
| % Solids / Moisture | <u>1</u> 160 | NUMBER 0.3 | <u>METI</u> 4 DEG. C | | QUIRED (8 oz. | COLLECTED | |
| Total Al, Cr, Fe | _ | al 6010B | 4 DEG. C | | (8 oz. | | |
| | <u> </u> | | | | | . 🗆 | |
| | <u> </u> | | | | | . 🗆 | |
| l □ | _ | | | | | . 📮 | |
| | _ | <u> </u> | | | | . H | |
| NOTES DUP/ MS/ MSD Colle | cted | | | | | | |
| | | | | | W | ood | |
| | | | | | * * | | • |
| SIGNATURE: Field F | orm w/ Signature on File | | | | | | Sampled by: BEG |
| | | | | | | | Prepared by: SAI Checked by: CTM |

| WOOD ENVIRONMENT & I | NFRASTRUCTURE SOLU | ΓΙΟΝS, INC. | | | | PAGE 1 OF 1 |
|-----------------------------------|--------------------------|---------------|---------------------------|--------------------------|---------------------|-------------------------------------|
| FIELD DATA RECO | RD - SURFACE WA | ΓER | | | | |
| PROJECT OLIN CHEMICAL S | UPERFUND SITE, WILMING | TON, MA JOB N | IUMBER | 6107180016 | DAT | 5/22/2018 |
| FIELD SAMPLE ID | OC-SW-SD17 | ACTIVITY TIME | START 9:25 | END 9 |):40 вот | TLE TIME 9:30 |
| QC SAMPLES COLLECTED | N/A | | | | | |
| SURFACE WATER DATA | | | EQUIPMENT USE | D TYPE O | F SURFACE WATE | R |
| WATER DEPTH | SPEC. COND | | BEAKER | _ | STREAM/ DITCH | DECON FLUIDS USED: |
| AT LOCATION 0.50 | | 0.985 mS/cr | PACS BOMB | | LAKE/ POND | DIWATER |
| DEPTH OF SAMPLE FROM SURFACE | 0.25 ft. D.O. | .55 mg/L | X PERISTALTIC | PUMP | SEEP | POTABLE WATER |
| TEMPERATURE 15.41 | DEG C SALINITY | % | X FILTER (0.45 | micron) | MARSH | NONE |
| TURBIDITY | ORP | 70 | X LDPE Tubing | & Silicon X | OTHER South Ditch | 1 |
| 1.71 | NTU | 78 mV | | | | |
| рН 8.83 | UNITS | | Notes: Up-stream | of location PZ-17RRF | ₹ | |
| SEDIMENT DATA | | | | | | |
| SEDIMENT SAMPLE START DEPTH | TYPE OF SEDIMEN | т | EQUIPMENT FOR COLLEC | CTION DECON FLUID | S USED | |
| END DEPTH | ORG | ANIC | HAND AUGER | DI WATER | 3 | |
| TYPE OF SAMPLE GRAB | SANI | | S.S. SPOON | POTABLE | | |
| SAMPLE OBSERVATIONS | GRA' | | ALUMINIUM PAN | LIQUINOX | (| |
| ODOR | | | DREDGE OTHER | OTHER _ | | - |
| FLOC OBSERVED | _ LJOTHE CLEAR OF LEA | | OTHER | | | |
| ANALYTICAL PARAMETERS | | | | | | |
| SURFACE WATER | METHO <u>NUMBE</u> | | PRESERVATION METHOD | VOLUME REQUIRED C | SAMPLE COLLECTED | |
| X Ammonia-Nitrogen | 10-107-0 | 06-1 N | H2SO4 / 4 DEG. C | 1 X 250 mL | X | |
| X Nitrate / Nitrite X Chloride | <u>300.0</u> 300.0 | NN | 4 DEG. C 4 DEG. C | 1 X 500 mL 1 X 500 mL | X | |
| X Sulfate | 300.0 | N | 4 DEG. C | 1 X 500 mL | X | |
| X Specific Conductivity | SM 2510 | B N | 4 DEG. C | 1 X 500 mL | X | |
| X Total Al, Cr, Na | Total 60 | | HNO3 / 4 DEG. C | 1 X 500 mL | X | |
| X Dissolved Al, Cr, Na | DIS. 601 | 0B Y | HNO3 / 4 DEG. C | 1 X 500 mL | X | |
| | | | | | | |
| ANALYTICAL PARAMETERS SEDIMENT | METH | OD | PRESERVATION | VOLUME | SAMPLE | |
| % Solids / Moisture | <u>NUME</u> 160.3 | <u>BER</u> | <u>METHOD</u> 4 DEG. C | REQUIRED C | COLLECTED | |
| Total Al, Cr, Fe | Total 60 | | 4 DEG. C | 1 X 8 oz. | H | |
| | | | | | 一 | |
| | | | | | | |
| | | <u></u> | | | | |
| l □ | | | | | | |
| | | | | | | |
| NOTES | | | | 346 | ood. | |
| | | | | 44 | 000. | |
| SIGNATURE: Field Fo | orm w/ Signature on File | | | | | |
| | | | | | | Sampled by: BEG Prepared by: SAI |
| ĺ | | | | | | Checked by: CTM |

Appendix B

Chain of Custody Records

TestAmerica Buffalo

10 Hazelwood Drive

Amherst, NY 14228-2298 360 325-Boston Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

360325-Bosto

360325-Boston



| Client Information | Sample 3R (Av. Phone: 9) { | 5 av | chand | Lab PM: Carrie Mason, Becky C | | | | | | | | COC No: 480-113049-229 | 977.1 | | | |
|--------------------------------------------------------------------------------------------|----------------------------|--------|------------------------------|----------------------------------------|------------------------------|----------------|---------------|-----------------|------------------|----------------|---------|---------------------------|-----------|--------------|------------------------------------------------------------------------|------------------------------------------------------------------|
| Client Contact Mr. Brian Guichard | Phone: 97 8 | 365 | 86121 | E-Ma | iil: ky masi | on@ | testar | meric | cainc.c | com | | 18 | 26 | | Page Page 1 of 2 | |
| Company: Olin Corporation | | | | | | | | | Ana | alysis Re | aues | | 40 | | Job# | 7 7 7 |
| Address: 51 Eames street | Due Date Requested | 1 | | | 題 | Г | | | | | T | 480-1360 | 30 COC | | Preservation Cod | |
| City: Wilmington State, Zip: | TAT Requested (day) | s): | | | | | | | | | | | | | A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 | M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 |
| MA, 01887 Phone: | PO#: | | | - | 1 [| 1 | | | | 1 1 | | | | | F - MeOH G - Amchlor | R - Na2S2O3 S - H2SO4 |
| 423-336-4012(Tel) Email: | REWI0025 | | | | No. | | | | | 11 | | | | | H - Ascorbic Acid I - Ice | T - TSP Dodecahydrat U - Acetone |
| beguichard@olin.com | | | | | No) | | | ö | | | | | | 2 | J - DI Water K - EDTA | V - MCAA W - pH 4-5 |
| Project Name: Olin Wilmington MA Groundwater Quarterly | Project #: 48006612 | | | | le (Ye | nlorid | | filtered Al/Cr | | | | | | contain | L - EDA | Z - other (specify) |
| Site Massachusetts | SSOW# | | | | Samp (SD (Y | Mate/Chloride | - ra | d filter | c Conc | | | | 11 | o to | Other: | |
| | | Sample | Type (C=comp, (w=w | Matrix later, 5=solid waste/oil, | ield Filtered erform MS/A | 300.0_28D - Su | 350.1 - Ammon | 6010MCP - Field | 2510B - Specific | | | | | Total Number | Consisting | -tti(tt |
| Sample Identification | Sample Date | Time | G=grab) BT=T Preservation | Code: | XX | N | | - | N | | Real II | | | X | Special in | structions/Note: |
| OC-GW-202S | 5-15-18 | 10:05 | 6 | Vater | 4 | 1 | 1 | 1 | 1 | | | | | 4 | | |
| OC-GW-202D | | 10:40 | 6 | Vater | 4 | 1 | 1 | 1 | 1 | | | | | 4 | | |
| OC-GW-25 | 5-16-18 | 8:15 | 6 | Vater | 1 | 1 | 1 | 1 | 1 | | | | | 4 | | |
| OC-GW-78S | 5-16-18 | 10110 | 6 | Vater | 4 | 1 | 1 | 1 | 1 | | | | | V | | |
| OC-GW-79S | 5-16-18 | 11:20 | 6 | Vater | 4 | 1 | 1 | 1 | 1 | | | | | 4 | | |
| OC-PZ-16RRR | 5-16-18 1 | 1:50 | 6 | Water | 4 | 1 | 1 | 1 | 1 | | | | | Y | | |
| OC-PZ-17RRR | 5-16-18/ | 0:30 | 6 | Vater | 4 | 1 | 1 | 1 | 1 | | | | | 4 | | |
| OC-GW-18R | 5-16-18 | 9:30 | 6 | Vater | 4 | 1 | 1 | 1 | (| | | | | Y | | |
| OC-PZ-24 | | 8:20 | G 1 | Vater | M | 1 | 1 | 1 | 1 | | | | | 4 | | |
| OC-PZ-25 | 5-15-189 | 3:55 | 6 | Vater | U | 1 | 1 | 1 | 1 | | | | | Y | | , |
| DUP GW 202D | - | UTYO | G 1 | Vater | VV | 1 | 1 | 1 | 1 | | | | | 4 | | |
| Possible Hazard Identification | | | | | Sa | 7 | | | | | | | | | ed longer than 1 | |
| Non-Hazard Flammable Skin Irritant Deliverable Requested: I, II, III, IV, Other (specify) | Poison B Unknow | n F | Padiological | - | Sp | _ | _ | _ | Client ns/QC | Requireme | | By Lab | | Archi | ive For | Months |
| Empty Kit Relipquished by: | D | ate: | | - | Time: | - | | | | | Me | thod of Sh | pment | | | |
| Relinquished by | Date/Time: | _ | Com | pany | Div see | Rece | eived b | у | / | , | | Da | ate/Time: | | 42 | Company |
| Relinquished by | Date/Time: | 18 | /Sa Com | pany | | 1 | elved b | hu | V | | | | ate/Time | 1-18 | 0100 | Company |
| Custody Seals Intact: Custody Seal No.: | | | | | / | Cool | ler Ten | nperal | ture(s) ° | °C and Other F | Remarks | | | | 2.4 | #1 |

Phone (716) 691-2600 Fax (716) 691-7991

10 Hazelwood Drive Amherst, NY 14228-2298

360325-Boston

Chain of Custody Record

360325-Boston

360325-Boston TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

| Client Information | Sampler 13 R1 W Phone: 9 78 | 262 | chia | Lab F Mas | on, Be | cky (| 2 | | | | Carner Tracking No(s): | | | | COC N 480-1 | to: 13049-22 | 977.2 | |
|-------------------------------------------------------------------------------------------------|--------------------------------------|----------------|-------------|-------------------------------------------------------------------|--------------------------------------------|--------------------------------|---------|----------|------------------------|----------|------------------------|-----------|---------------------------|--------------|------------------|-----------------------|--------------------------|--------------------|
| Client Contact Mr. Brian Guichard | Phone: 528 | 458 | 10121 | E-Ma | | | | nerica | ainc o | om | | | | | Page: | 2 of 2 | | |
| Company | 1 170 | 030 | 0.41 | 1000 | 1 | 01165 | COLL | | | | Dog | rooted. | | | Job # | 2012 | | |
| Olin Corporation Address: | Due Date Request | led: | | | 1 68 | Г | ТТ | T | Alla | llysis | Keq | uested | TT | T | Prese | rvation Co | des: | |
| 51 Eames street City: | TAT Requested (d | avs): | | | | | | | | | | | | | A - HC B - Na | | M - Hexan | ne |
| Wilmington | 1 | -7-1 | | | | 1 | 1 | | | | | | | | C-Zn | Acetate tric Acid | 0 - AsNa0 P - Na2O | |
| State, Zip: MA, 01887 | | | | | | | | | | | | | | | | HSO4 | Q - Na2S0 R - Na2S2 | 03 |
| Phone: 423-336-4012(Tel) | PO# REWI0025 | | | | No) | | | 1 | | | | | | | G - An H - As | nchlor corbic Acid | S - H2SO | 4 lodecahydrate |
| Emeil beguichard@olin.com | WO #: | | | | | | | | | | | | | 9 | J-Ice | Water | U - Acetor V - MCAA | |
| Project Name: Olin Wilmington MA Groundwater Quarterly | Project #: 48006612 | | | | tered Sample (Yes or MS/MSD (Yes or No) | hloride | | ed AI/C | 7 | | | | | containers | L-ED | A | W - pH 4- Z - other (| |
| Site: Massachusetts | SSOW# | | | | Samp ASD (Y | Ifate/C | ë | d filter | ic Conc | | | | | 6 | | | | |
| Sample Identification | Sample Date | Sample Time | | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | X Field Filtered | Z 300.0_28D - Sulfate/Chloride | - | _ | Z510B - Specific Cond. | | | | | Total Number | | Special Ir | nstruction | s/Note: |
| Fw 2020 MS | 5-15-18 | 10:40 | 6 | Water | V | 7 | 1 | 1 | 1 | | | | | 4 | 1 | | | |
| GW20213MSD | 5-15-18 | | 6 | Water | 1 | 1 | 1,1 | 1 | , | 1 | | | | 4 | | | | |
| | 7 .7 10 | | -0 | Water | | | | | | | | | | | | | | |
| | | | | | 1 | | | | 7 | | | | | | | | | |
| | | | | | | 1 | | | + | + | | + | | 1 6 | | | | |
| | | | | | | | | | 1 | | | | | | | | | |
| | | | | | | | | 1 | | | | | | 1. IN | | | | |
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| | | | | | | | | - | 1 | - | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| Possible Hazard Identification | | | | | Sa | | | | | e may | be as | sessed | f samples | | | | 1 month) | |
| Non-Hazard Flammable Skin Irritant Poise Deliverable Requested: I, II, III, IV, Other (specify) | on B Unkno | own R | adiological | | Sn | | Return | | | Requir | | sposal By | Lab | Arch | nive For | | Month | s |
| | | . | | | | cciai | msiru | CHOT | 5/40 | requir | cineii | | 1-151 | | | | | |
| Empty Kit Relinquished by: Relinquished by: | Date/Time: | Date: | | Company | Time: | Reci | elved b | v | _ | | | Metho | d of Shipment Date/Tim | 9 | | | Company | |
| A | 5-1 | 6-16 | | | | | to | 5 | 1 | 1 | 1 | - | 5 | 5-16- | -11. | 1200 | 9 0 | |
| Relinquished by: | Date/Time | 6 | 1800 | Company | (| | Will Co | lel | 1 | | - | | Date/Tim | e-17-1 | 8 | 0100 | Company | 2 |
| Relinquished by: | Date/Time: | | | Company | | Red | ewed by | y: | | | | | Date/Tim | e | | | Company | |
| Custody Seals Intact: Custody Seal No.: | | | | | | Cool | ler Tem | peratu | re(s) °(| C and Of | her Rei | marks | | | | 2 | 4 | #1 |

Page 30 of 30

6/7/2018







Amherst, NY 14228-2298

10 Hazelwood Drive

Chain of Custody Record

360325-Boston

TestAmerica

| Client Information | Sampler BR \ \ Phone: - | Guic | PERM | Lab F Mas | on, Be | cky C | | | | | | | | | | OC No: 80-113051-22979 | 9.1 |
|----------------------------------------------------------------------------------------------------------------------------|-------------------------|----------------|---------------------------------------|-------------------------------------------------------------|------------------|----------------|-------------------|-----------------|------------------|---------------|-----------|-------------|-----------|--------------|--------------|-----------------------------------|-----------------------------------------------|
| Client Contact: Mr. Brian Guichard | Phone: 9730 | 586 | 121 | E-Ma | iil: ky.mas | on@t | estar | merica | ainc. | com | | 1 | <u> </u> | | | age: Page 1 of 2 | |
| Company: Olin Corporation | | J V - | | | | | | | An | alysis R | eau | | 1 | - | | ob #: | |
| Address: 51 Eames street | Due Date Requeste | ed: | | | | | | | | ŤТ | | | | 100 | P | reservation Codes | 3: |
| City: | TAT Requested (da | ys): | | | | | | | | | | 480-136 | 191 CO | | В | B - NaOH | M - Hexane N - None |
| Vilmington Itate, Zip: #A, 01887 | 11.0.0 | | | | | | | | | | | | | | E | D - Nitric Acid F E - NaHSO4 (| O - AsNaO2 P - Na2O4S Q - Na2SO3 |
| thone: (23-336-4012(Tel) | PO #: REWI0025 | | | | | | | | | | | | | | 0 | G - Amchlor | R - Na2S2O3 S - H2SO4 T - TSP Dodecahyd |
| mail: neguichard@olin.com | WO #: | | | | s or No) | | | | | | | | | | 1 | - Ice | U - Acetone V - MCAA |
| roject Name: Dlin Groundwater Semi-Annual | Project #: 48006612 | | | | (Yes | Sulfa | onia | | Conductance | | | | | | C . | | W - pH 4-5 Z - other (specify) |
| Site: Massachusetts | SSOW#: | | | | Sample | oride & | Ammonia | AI, Cr | | | | | | | of contain | Other: | |
| Sample Identification | Sample Date | Sample Time | Sample Type (C=comp, G=grab) | Matrix =water, S=solid O=waste/oil, =Tissue, A=Air | Field Filtered S | 300.0_28D - Ch | 350.1 - Nitrogen, | 6010MCP - Diss. | 2510B - Specific | | | | | | Total Number | Special Inst | tructions/Note: |
| 20.004.400 | | <u>></u> | Preservation | | X | N | S | D | N | | | | | | X | | |
| OC-GW-10S | 5-18-18 | 9:55 | 6 | Water | 1 | 1 | 1 | 1 | 1 | | | | ++ | | 4 | | |
| OC-GW-201S | 5-18-18 | 11:45 | 6 | Water | 1 | 1 | 1 | 1 | 1 | | | | \perp | | 4 | | |
| OC-GW-24 | 5-18-18 | 11:05 | G | Water | 4 | 1 | 1 | ١ | 1 | | | | | 1 | 4 | | |
| DC GW 28 | \$ 17-18 | 8:15 | 6 | Water | | 1 | | | - | | - | - | - | | | | |
| DC-GW-34D | 5-17-18 | 9:45 | G | Water | 1 | 1 | 1 | 1 | 1 | | | | | | 4 | | |
| DC-GW-34SR | 5-17-18 | 10:90 | G | Water | U | 1 | ı | (| 1 | | | 1 | | 1 | 4 | | |
| DC-GW-35S | 5-17-18 | 8:55 | G | Water | 4 | 1 | 1 | (| 1 | | | | | | 4 | | |
| OC-GW-428 (MP2 POR) 13) | 5-18-18 | 8:55 | C | Water | 1 | 1 | 1 | 1 | (| | | 1 | | | 4 | | |
| DC-GW-43SR | 5-18-18 | 7:55 | 6 | Water | 4 | 1 | (| 1 | ١ | | | | | | 4 | | |
| OC-GW-76S | 5-18-18 | 10:30 | G | Water | 0 | (| (| 1 | 1 | | | | | | 4 | | |
| DC-GW-CA-1 | 5-17-18 | 8:15 | G | Water | 1 | (| 1 | 1 | 1 | | | | | 1 | 4 | | |
| Possible Hazard Identification Non-Hazard Flammable Skin Irritant Deliverable Requested: I, II, III, IV, Other (specify) | | | Radiological | | | \Box_{F} | Retur | n To | Clier | | Dispo | ssed if | | are ret | | ed longer than 1 i | month) Months |
| Empty Kit Relinquished by: | | Date: | | - | Time | 9: | | | | | | Method | of Shipme | nt: | - | | |
| Relinquished by | Date/Time: | | C | ompany | | Red | eived | by: | - | | 1 | | Date/Ti | me: | s. | C 1335 | Company |
| Relinquished by Relinquished by | Date/Time: | 18 | 1800 | ompany | | 1 | eived | 11 | 1 | | | | Date/Ti | me: -19-1 | | 0200 | Company |
| Custody Seals Intact: Custody Seal No.: | | | | | / | Cod | oler Te | empera | ature(| s) °C and Oth | ner Rema | rks: | | | | 2.2 | # |

Ver: 08/04/2016

Page 28 of 29









360325-Boston

360325-Boston

TestAmerica

Chain of Custody Record

10 Hazelwood Drive

Amherst, NY 14228-2298

| Phone (716) 691-2600 Fax (716) 691-7991 | | | | | | _ | | | | | | | | | | | TO PENDER BY MARKONSBULING SERVING |
|--------------------------------------------------------|---------------------|----------------|------------------------|-------------|----------------|-------------|-------------|---------|---------|------------------------------|---------|----------|------------|------------|----------|--------------|------------------------------------------------------------------------------------|
| Client Information Client Contact: | Sampler: Phone: 978 | Guro | hard | | son, E | Beck | уС | | | | | Ca | rier Traci | king No(s) | | | COC No: 480-113051-22979.2 |
| Mr. Brian Guichard | Phone: | 0586 | 121 | E-Ma bec | ail: :ky.ma | ason | @tes | stame | ericai | nc.co | m | | | | | | Page: Page 2 of 2 |
| Company: Olin Corporation | | | | | Π | | | | | Anal | vsis | Reque | sted | | 3000 | | Job#: |
| Address: | Due Date Requeste | ed: | | | | | | T | | T | T | | TT | | | | Preservation Codes: |
| 51 Eames street City: | TAT Requested (da | ays): | | | - 1 | | | | | | | | 1 | | | | A - HCL M - Hexane B - NaOH N - None |
| Wilmington | _ | | | | | | | | | | | | | | | | C - Zn Acetate O - AsNaO2 |
| State, Zip: MA, 01887 | | | | | | | | | | | | | | | | | E - NaHSO4 Q - Na2SO3 |
| Phone: 423-336-4012(Tel) | PO #: REWI0025 | | | | | | | | | | | | | | | | F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate |
| Email: | WO #: | | | | - 2 | = | | | | | | | 1 1 | | | | I - Ice U - Acetone |
| beguichard@olin.com Project Name: | Project #: | _ | | | es o | or No) | lfate | | | auce | | | | | | ners | J - DI Water V - MCAA K - EDTA W - pH 4-5 |
| Olin Groundwater Semi-Annual | 48006612 | | | | le (Y | | & Su | Ammonia | ა : | ancre | | | 11 | | | containers | L - EDA Z - other (specify) |
| Site: Massachusetts | SSOW#: | | | | Samp | MS/MSD (Yes | | | . Al, C | | | | | | | ot co | Other: |
| Sample Identification | Sample Date | Sample Time | (C=comp, G=grab) вт | | Field Filtered | Perform M | 300.0_28D - | | | 2510B - Specific Conductance | | | | | | Total Number | Special Instructions/Note: |
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Amherst, NY 14228-2298

10 Hazelwood Drive

360325-Boston

Chain of Custody Record

TestAmerica

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| Phone (716) 691-2600 Fax (716) 691-7991 | | | | | | | | | | | | | | K 3 | 1 | : | | THE LEADER IN ENV | RONMENTAL TESTIN | G |
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Ver: 08/04/2016

Phone (716) 691-2600 Fax (716) 691-7991

10 Hazelwood Drive Amherst, NY 14228-2298

360325-Boston

Chain of Custody Record

360325-Boston

TestAmerica

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| Client Information | Phone: 978 | n low | chard | Lab PM Masor | | ку С | | | | | | | | | COC No: 480-113050-229 | 78.1 | |
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Ver: 08/04/2016

Appendix C

Cap Inspection Log

| | | Olin Wilmin | gton Co | ntainment Area | Temporary Cap Inspection |
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| nspection Checkli | st | | | | |
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Denotes Area needing Seam Repair

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After Recent well Drilling operations.

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so adhesive tape will bond.

Appendix A2

Third Quarter 2018 Sampling Event





Interim Response Steps Field Activity Report Third Quarter 2018 Sampling Event

Olin Chemical Superfund Site Wilmington, Massachusetts Project 6107180016

Prepared for:



Interim Response Steps Field Activity Report Third Quarter 2018 Sampling Event

Olin Chemical Superfund Site Wilmington, Massachusetts

Project 6107180016

Prepared for:

Olin Corporation 3855 North Ocoee St., Suite 200, Cleveland, TN 37312

Prepared by:

Wood Environment & Infrastructure Solutions, Inc. 271 Mill Road 3rd Floor Chelmsford, MA 01824 USA

3-Dec-18

T: 978-692-9090

Prepared and Reviewed by:

Peter H. Thompson Project Manager Michael J. Murphy Project Principal

Am of Murphy

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| препе | | Criam or | sustady Necestas | |
| | | | List of acronyms | |
| Amec F | oster \ | Wheeler | Amec Foster Wheeler Environment and Infrastructure, Inc. | |
| DO | | | Dissolved Oxygen | |
| IRSWP | | | Interim Response Steps Work Plan | |
| LNAPL | | | Light Non-Aqueous Phase Liquid | |
| MACTE | C | | MACTEC Engineering and Consulting, Inc. | |
| NTU | | | Nephelometric Turbidity Units | |
| ORP | | | Oxidation/Reduction Potential | |

Remedial Investigation/Feasibility Study

Specific Conductivity

TestAmerica Laboratories, Inc.

wood.

RI/FS

SC

TAL

USEPA United States Environmental Protection Agency UV Ultraviolet

1.0 Introduction

On behalf of the Olin Corporation (Olin), Wood Environment & Infrastructure Solutions, Inc. (Wood E&IS) formerly Amec Foster Wheeler, presents this summary report for field activities completed in association with the Third Quarter 2018 groundwater and surface water monitoring for the Slurry Wall/Cap Monitoring Program and the Plant B Monitoring Program. These activities were conducted consistent with the requirements and procedures contained in the Final Interim Response Steps Work Plan (IRSWP), Olin Chemical Superfund Site, 51 Eames Street, Wilmington, Massachusetts dated August 8, 2008 and the Volume IIIB, the Quality Assurance Project Plan, of the Final Remedial Investigation/Feasibility Study (RI/FS) Work Plan dated August 14, 2009 (MACTEC Engineering and Consulting, Inc. [MACTEC], 2009).

1.1 Limitations

This report, including its findings, opinions, and conclusions, is intended for the exclusive use and benefit of, and may be relied upon only by Olin Corporation and the United States Environmental Protection Agency (USEPA).

wood

2.0 Slurry Wall/Cap monitoring program

The purpose of the Slurry Wall/Cap Monitoring Program is to monitor the concentrations of select constituents in groundwater and surface water in areas adjacent to and within the South Ditch of the former Olin Facility located at 51 Eames Street, Wilmington, Massachusetts.

The Third Quarter 2018 groundwater and surface water monitoring program includes collecting groundwater level measurements from select monitoring wells and piezometers, collecting and analyzing groundwater samples from five monitoring wells and five piezometers, and collecting and analyzing surface water samples from seven locations within the East Ditch and South Ditch. Groundwater and surface water sample locations are listed in **Table 1** and shown on **Figure 1**. The groundwater and surface water sampling program is further described in the Final IRSWP (MACTEC, 2008), which has been approved by the USEPA.

2.1 Scope of Work

The Slurry Wall/Cap Monitoring Program for this sampling event consists of collecting groundwater level measurements in the vicinity of the South Ditch area; collecting and analyzing groundwater samples from the following monitoring wells: GW-25, GW-78S, GW-79S, GW-202S, and GW-202D; and piezometers: PZ-16RRR, PZ-17RRR, PZ-18R, PZ-24, and PZ-25; collecting and analyzing surface water samples from the following locations: ISCO-1, ISCO-2, ISCO-3, SD-17, PZ-16RRR, PZ-17RRR, and PZ-18R; and downloading water level and barometric pressure data from data loggers that have been installed in the following wells and piezometers: GW-10S, GW-35S, GW-CA1, GW-76S, GW-78S, GW-CA3S, GW-CA4S, PZ-24, PZ-25, and GW-6S. Monitoring wells, piezometers, and surface water sample locations are shown on **Figure 1**.

2.1.1 Groundwater Level Measurement

On August 6 and 7, 2018, Olin personnel completed a site reconnaissance of the monitoring well locations in the Slurry Wall/Cap Monitoring Program and collected groundwater level measurements. This included measuring depth to groundwater from 22 monitoring wells and piezometers using a water level meter. Groundwater level measurements and calculated groundwater elevations are summarized in **Table 2**.

2.1.2 Groundwater Sampling

On August 6 and 7, 2018, Olin personnel sampled groundwater from five monitoring wells and five piezometers using 2010 USEPA low stress (low flow) groundwater sampling methods.

Prior to low flow sampling, a Horiba U-52 multi-parameter water quality meter and turbidity meter were calibrated according to the instrument manufacturer's specifications using certified calibration solutions.

Groundwater was purged using an adjustable rate peristaltic pump along with dedicated tubing at each monitoring location. During sampling activities, the purged groundwater was continuously monitored using the multi-parameter water quality meter for pH, temperature, specific conductivity (SC), dissolved oxygen (DO), oxidation/reduction potential (ORP), and turbidity. Well purging continued at each location until these field parameters stabilized as indicated in Appendix A of the IRSWP.

Piezometer wells PZ-16RRR and PZ-17RRR went dry upon purging and could not be sampled by low flow methods. These wells were purged dry and sampled upon recovery, which is the alternative approved method. Samples collected by this method typically have elevated turbidity. The final low flow purging field parameter measurements are presented in **Table 3**. Field data records for each groundwater monitoring location are attached in **Appendix A**.

Upon stabilization of groundwater parameters, groundwater samples were collected by directly filling the laboratory prepared sample bottles. A 0.45-micron pore diameter, in-line Teflon™ filter was used to field filter groundwater for dissolved metal analysis in accordance with the IRSWP. The samples were placed on ice and transferred to TestAmerica Laboratories, Inc. (TAL) of Buffalo, New York, under chain-of-custody for chemical analyses as summarized in **Table 4**. Copies of the chain-of-custody documents are provided in **Appendix B**. Laboratory analytical data are presented in the January 2019 Semi-Annual Status Report.

Purged groundwater from each monitoring well was collected in collapsible plastic containers, transported to the Block House building, adjacent to the Plant B groundwater treatment building, and containerized in a secured 55-gallon drum. Olin characterizes and disposes of that material in accordance with applicable regulations.

2.1.3 Surface Water Sampling

On August 8, 2018, Olin personnel indicated all seven surface water sample locations were dry within the East Ditch and South Ditch and no surface water samples were collected.

2.1.4 Data Logger Data Download

Data loggers are deployed in 10 monitoring wells and piezometers: GW-10S, GW-35S, GW-CA1, GW-76S, GW-78S, GW-CA3S, GW-CA4S, PZ-24, PZ-25, and GW-6S, to continuously monitor groundwater elevation proximate to the cap area. Wood E&IS downloaded data from the 10 data loggers, along with data from the barometric pressure data logger deployed in GW-35S. Downloaded data from the loggers are presented in the January 2019 Semi-Annual Status Report.

2.1.5 Cap Inspection

The temporary cap is composed of ten large and three small scrim reinforced polyethylene sheets of 8 mil thickness. These sheets were factory fabricated with double welded seams from smaller, narrower panels. The seams between the large sheets were field fabricated by folding and sewing the edges of the sheets together with an ultraviolet (UV) -resistant thread. The original temporary cap was installed in 2001 and consisted of a 6-mil thick sheet. Due to deterioration of the 6-mil sheet, an 8-mil thick cover was installed directly over the 6-mil cover and re-ballasted with sand bags to resist wind uplift.

Since November 2016, Olin on-site personnel have been conducting the cap inspections and integrating the inspections with the maintenance repair activities. Olin has reduced the official inspection frequency from quarterly to semi-annually with informal inspections to continue to ensure that any potential significant issues are addressed in a timely fashion. Accordingly, there was no formal cap inspection in the Third Quarter 2018.

3.0 Plant B monitoring program

The purpose of the Plant B groundwater sampling and analysis program is to monitor groundwater quality at select monitoring wells and conduct gauging activities to determine groundwater elevations and light non-aqueous phase liquid (LNAPL) thickness.

3.1 Scope of Work

The Third Quarter 2018 Plant B Monitoring Program consisted of measuring groundwater levels in 28 monitoring wells within the Plant B area, gauging LNAPL thickness in monitoring wells where LNAPL was observed, and USEPA low stress (low flow) groundwater sampling at monitoring well: GW-16R. Groundwater monitoring wells from the Plant B Monitoring Program are shown on **Figure 2**.

3.1.1 Groundwater Level Measurements and LNAPL Gauging

On August 31, 2018, Olin personnel completed a site reconnaissance of the monitoring well locations in the Plant B Monitoring Program and collected groundwater level measurements and LNAPL thickness measurements. Depth to groundwater was measured in 28 monitoring wells using a water interface probe. For wells with observed LNAPL, LNAPL thickness was measured using an oil/water interface probe. Groundwater level measurements, groundwater elevations, and LNAPL thickness measurements are summarized in **Table 5**.

3.1.2 Groundwater Sampling

On August 8, 2018, Olin personnel sampled groundwater from monitoring well GW-16R following the 2010 USEPA low stress (low flow) groundwater sampling method.

Prior to low flow sampling, a Horiba U-52 multi-parameter water quality meter and turbidity meter were calibrated according to the instrument manufacturer's specifications using certified calibration solutions.

Groundwater was purged using an adjustable rate peristaltic pump along with dedicated tubing at the sample location. During sampling activities, the purged groundwater was continuously monitored using the Horiba U-52 multi-parameter water quality meter for pH, temperature, SC, DO, ORP, and turbidity. Well purging continued at the sample location until these field parameters stabilized as indicated in Appendix A of the IRSWP. The final low flow purging field parameter measurements are presented in **Table 6**. Field data records for each groundwater monitoring location are attached in **Appendix A**.

Upon groundwater parameter stabilization, groundwater samples were collected by directly filling the laboratory prepared glassware. The samples were placed on ice, and were transferred to TAL of Buffalo, New York, under chain-of-custody for chemical analyses as summarized in **Table 7**. Copies of the chain-of-custody documents are provided in **Appendix B**. Laboratory analytical data will be presented in the January 2019 Semi-Annual Status Report.

Purged groundwater from sampling activities was collected in collapsible plastic containers, transported to the Block House building, adjacent to the Plant B groundwater treatment building, and containerized in a secured 55-gallon drum. Olin characterizes and disposes of that material in accordance with applicable regulations.

4.0 References

MACTEC Engineering and Consulting, Inc. (MACTEC), August 8, 2008. Final Interim Response Steps Work Plan, Olin Chemical Superfund Site, Wilmington, Massachusetts.

MACTEC, August 14, 2009. Final RI/FS Work Plan, Olin Chemical Superfund Site, Wilmington, Massachusetts.

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Tables

Table 1

Groundwater and Surface Water Sampling Locations Slurry Wall/Cap Monitoring Program Third Quarter 2018 Sampling Event Olin Chemical Superfund Site Wilmington, Massachusetts

| Groundwater | Surface Water |
|-------------|---------------|
| GW-25 | ISCO1* |
| GW-78S | ISCO2* |
| GW-79S | ISCO3* |
| GW-202S | PZ-16RRR* |
| GW-202D | PZ-17RRR* |
| PZ-16RRR # | PZ-18R* |
| PZ-17RRR # | SD-17* |
| PZ-18R | |
| PZ-24 | |
| PZ-25 | |
| GW-16R ^ | |

Notes:

- Piezometer replaced in South Ditch

- ^ Plant B Monitoring Well
- * South Ditch and East Ditch dry, no samples collected

Prepared by: CTM 8/31/2018 Checked by: SAI 8/31/2018

Table 2 Groundwater Elevations Slurry Wall/Cap Monitoring Program Third Quarter 2018 Sampling Event Olin Chemical Superfund Site Wilmington, Massachusetts

| WELL ID | Reference Elevation | Depth to Water | Groundwater Elevation (3) | Notes | Date Measured |
|------------------|------------------------|----------------|------------------------------|-------|------------------|
| I.D. | (ft msl) | (ft) | (feet NGVD) | | |
| GW-10S | 89.79 | 8.67 | 81.12 | TOC | 8/7/2018 |
| GW-24 | 83.43 | 2.45 | 80.98 | | 8/7/2018 |
| GW-25 | 85.97 | 5.45 | 80.52 | | 8/7/2018 |
| GW-26* | 84.93 | * | | * | |
| GW-34D | 90.36 | 7.50 | 82.86 | | 8/7/2018 |
| GW-34SR | 89.13 | 6.22 | 82.91 | | 8/7/2018 |
| GW-35S | 88.51 | 7.41 | 81.10 | | 8/7/2018 |
| GW-39 ^ | 83.64 | 7.64 | 76.00 | | 8/7/2018 |
| GW-42S** | 84.18 | ** | | ** | |
| GW-43SR | 87.86 | 6.84 | 81.02 | | 8/7/2018 |
| GW-55D | 81.95 | 2.92 | 79.03 | | 8/7/2018 |
| GW-55S | 81.70 | 2.55 | 79.15 | | 8/7/2018 |
| GW-76S | 88.45 | 7.27 | 81.18 | TOC | 8/7/2018 |
| GW-78S | 84.89 | 4.74 | 80.15 | | 8/6/2018 |
| GW-79S | 81.54 | 4.61 | 76.93 | | 8/7/2018 |
| GW-201S | 83.29 | 3.73 | 79.56 | | 8/7/2018 |
| GW-202D | 86.52 | 6.15 | 80.37 | | 8/6/2018 |
| GW-202S | 86.97 | 6.72 | 80.25 | | 8/6/2018 |
| GW-CA1 | 88.01 | 6.88 | 81.13 | | 8/7/2018 |
| PZ-16RRR/IN | *** | 3.79 | | | 8/7/2018 |
| PZ-16RRR/OUT (4) | *** | NM | | NM | |
| PZ-17RRR/IN | *** | 2.55 | | | 8/7/2018 |
| PZ-17RRR/OUT (4) | *** | NM | | NM | |
| PZ-18R/IN | 82.42 | 2.01 | 80.41 | | 8/7/2018 |
| PZ-18R/OUT (4) | 82.42 | NM | | NM | |
| PZ-24 | 89.43 | 8.97 | 80.46 | | 8/6/2018 |
| PZ-25 | 88.90 | 8.58 | 80.32 | | 8/6/2018 |

Notes:

- (1) Measurement from top of PVC. If no PVC, measurement from TOC
- (2) Collected using a Solinst water interface probe
- (3) Groundwater Elevation = Reference Elevation Depth to Water
- (4) Reported elevation of surface water adjacent to piezometer

TOC - Water level measurement taken from Top of Casing

- * Well removed for detention basin construction
- ** Well destroyed during paving
- *** Piezometer replaced in South Ditch. Not surveyed

NGVD - National Geodetic Vertical Datum

msl - mean sea level

ft - feet

NM - not measured

^ - Well heaving

Prepared by: SAI 8/31/2018 Checked by: CTM 8/31/2018

Table 3 Final Field Parameters for Groundwater Sampling Slurry Wall/Cap Monitoring Program Third Quarter 2018 Sampling Event Olin Chemical Superfund Site

Olin Chemical Superfund Site Wilmington, Massachusetts

| Quarterly Slurry Wall/Cap Mo | nitoring Wel | l Samples | | | | Quarterly Si Piezometer | lurry Wall/Ca Samples | р | | |
|-------------------------------|--------------|-----------|----------|----------|----------|----------------------------|--------------------------|----------|----------|----------|
| Location ID | GW-25 | GW-78S | GW-79S | GW-202S | GW-202D | PZ-16RRR | PZ-17RRR | PZ-18R | PZ-24 | PZ-25 |
| Date | 8/7/2018 | 8/6/2018 | 8/7/2018 | 8/6/2018 | 8/6/2018 | 8/7/2018 | 8/7/2018 | 8/7/2018 | 8/6/2018 | 8/6/2018 |
| Depth to Water (ft) | 5.77 | 4.97 | 4.64 | 6.75 | 6.17 | Dry | Dry | 2.89 | 9.09 | 8.59 |
| Temperature (°C) | 15.91 | 20.36 | 18.05 | 16.88 | 17.20 | 24.11 | 20.98 | 21.92 | 20.27 | 18.02 |
| Specific Conductivity (mS/cm) | 0.887 | 1.18 | 1.62 | 0.859 | 3.54 | 1.79 | 0.571 | 2.03 | 1.76 | 1.14 |
| pH (standard units) | 6.36 | 6.44 | 6.14 | 6.46 | 5.63 | 6.27 | 6.70 | 6.25 | 6.87 | 6.81 |
| Dissolved Oxygen (mg/L) | 0.95 | 0.17 | 0.17 | 0.21 | 0.01 | 6.87 | 1.98 | 7.19 | 6.12 | 1.60 |
| Turbidity (NTU) | 0.10 | 257 | 53.4 | 0.10 | 12.3 | 89.7 | 982 | 11.9 | 43.1 | 13.3 |
| ORP (millivolts) | -169 | 12 | -9 | 140 | 248 | -80 | 78 | -124 | -88 | 23 |

Notes:

ft - feet

mS/cm - milliSiemens per centimeter

mg/L - milligrams per liter

NTU - nephelometric turbidity units

ORP - Oxidation/Reduction Potential

mV - millivolts

Dry = purged dry and sampled upon recovery

Prepared by: CTM 8/31/2018 Checked by: SAI 8/31/2018

Table 4 Groundwater Laboratory Analytical Program Slurry Wall/Cap Monitoring Program Third Quarter 2018 Sampling Event Olin Chemical Superfund Site

Wilmington, Massachusetts

| Analyte | Analysis Method | Detection Limit | Units |
|-------------------------------|------------------------------|-----------------|----------|
| Physical/Inorganic Parameters | | | |
| Ammonia-Nitrogen | EPA 350.1 (10-107-06-1-K) | 0.10 | mg/L |
| Chloride | EPA 300.0 | 0.28 | mg/L |
| Specific Conductivity | SM18 2510B | 1.0 | μmhos/cm |
| Sulfate | EPA 300.0 | 0.35 | mg/L |
| Filtered Metals | | | |
| Aluminum, filtered | SW846 6010B | 60 | μg/L |
| Chromium, filtered | SW846 6010B | 1.0 | μg/L |

Prepared by: CTM 8/31/2018

Checked by: SAI 8/31/2018

Notes: mg/L - milligrams per liter

μmhos/cm - micromhos per centimeter

 μ mhos/cm = μ S/cm (microSiemens per centimeter) 1 μ S/cm = 0.001 mS/cm (milliSiemens per centimeter)

μg/L - micrograms per liter

Table 5 Groundwater Elevations Plant B Monitoring Program Third Quarter 2018 Sampling Event Olin Chemical Superfund Site Wilmington, Massachusetts

| WELL ID | Reference | Depth to | Depth to | Product Thickness | Groundwater | Date |
|---------|---------------|-----------|-------------|-------------------|---------------|-----------|
| WELLID | Elevation (1) | Water (2) | Product (3) | (4) | Elevation (5) | Measured |
| I.D. | (ft msl) | (ft) | (ft) | (ft) | (feet NGVD) | |
| B-2 | 90.48 | 11.76 | NPD | NA | 78.72 | 8/31/2018 |
| B-3 | 90.32 | 11.26 | NPD | NA | 79.06 | 8/31/2018 |
| B-5R | 91.38 | 11.73 | NPD | NA | 79.65 | 8/31/2018 |
| B-7A | 88.81 | 8.38 | NPD | NA | 80.43 | 8/31/2018 |
| B-17 | 91.55 | 10.29 | NPD | NA | 81.26 | 8/31/2018 |
| GW-13 | 90.57 | 11.60 | NPD | NA | 78.97 | 8/31/2018 |
| GW-14 | 88.70 | 9.61 | NPD | NA | 79.09 | 8/31/2018 |
| GW-15 | 90.01 | 9.30 | NPD | NA | 80.71 | 8/31/2018 |
| GW-16R | 92.46 | 11.45 | NPD | NA | 81.01 | 8/31/2018 |
| GW-23 | 91.04 | 12.28 | 11.85 | 0.43 | 79.17 | 8/31/2018 |
| GW-52S | 87.95 | 9.27 | NPD | NA | 78.68 | 8/31/2018 |
| GW-100 | 90.15 | 11.46 | NPD | NA | 78.69 | 8/31/2018 |
| GW-101 | 90.14 | 11.45 | NPD | NA | 78.69 | 8/31/2018 |
| GW-102 | 89.00 | 10.30 | NPD | NA | 78.70 | 8/31/2018 |
| IW-1 | 90.71 | 11.65 | NPD | NA | 79.06 | 8/31/2018 |
| IW-2 | 90.53 | 11.60 | 11.58 | 0.02 | 78.95 | 8/31/2018 |
| IW-3 | 90.76 | 11.76 | NPD | NA | 79.00 | 8/31/2018 |
| IW-6 | 89.15 | 10.63 | NPD | NA | 78.52 | 8/31/2018 |
| IW-7 | 90.10 | 11.34 | NPD | NA | 78.76 | 8/31/2018 |
| IW-8 | 89.94 | 11.17 | 11.16 | 0.01 | 78.78 | 8/31/2018 |
| IW-9 | 89.78 | 10.97 | NPD | NA | 78.81 | 8/31/2018 |
| IW-10 | 90.43 | 11.65 | NPD | NA | 78.78 | 8/31/2018 |
| IW-11 | 89.92 | 11.20 | 11.18 | 0.02 | 78.74 | 8/31/2018 |
| IW-12 | 90.31 | 11.62 | NPD | NA | 78.69 | 8/31/2018 |
| IW-13 | 89.90 | 11.05 | NPD | NA | 78.85 | 8/31/2018 |
| PID | 89.97 | 11.24 | 11.23 | 0.01 | 78.74 | 8/31/2018 |
| P5 | 90.45 | 11.65 | 11.63 | 0.02 | 78.82 | 8/31/2018 |
| 12-IN | 89.84 | 10.87 | NPD | NA | 78.97 | 8/31/2018 |

Prepared by: CTM 8/31/2018

Checked by: SAI 8/31/2018

Notes:

(1) - Reference elevations surveyed 11/97. New TOC survey by Dana Perkins 4-5/98

(2) - Top of PVC. If no PVC, measurement from top of steel casing

(3) - Collected using a Solinst water interface probe or Geotech oil/water interface probe

(4) - If sheen is noted, a product thickness of 0.01 feet will be used to calculate the groundwater elevation

(5) - Groundwater Elevation = Reference Elevation - (Depth to Water - (Product Thickness x 0.95))

TOC - Top of Casing

NPD - No Product Detected

NA - Not Applicable

NGVD - National Geodetic Vertical Datum

msl - mean sea level

ft - feet

East Ditch - No sheen noted; Observed OK

Table 6

Final Field Parameters for Groundwater Sampling Plant B Monitoring Program Third Quarter 2018 Sampling Event Olin Chemical Superfund Site Wilmington, Massachusetts

| Plant B Monitoring Well Samples | |
|-----------------------------------------|----------|
| Location | GW-16R |
| Date | 8/8/2018 |
| | |
| Depth to Water (ft) | 12.70 |
| | |
| Temperature (°C) | 19.52 |
| | |
| Specific Conductivity (mS/cm) | 0.172 |
| | |
| pH (standard units) | 6.81 |
| | |
| Dissolved oxygen (mg/L) | 0.22 |
| T 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | |
| Turbidity (NTU) | 4.8 |
| | |
| Oxidation Reduction Potential (mV) | -21 |

Notes:

Prepared by: CTM 8/31/2018

ft - feet

Checked by: SAI 8/31/2018

mS/cm - milliSiemens per centimeter

mg/L - milligrams per liter

NTU - nephelometric turbidity units

ORP - Oxidation/Reduction Potential

mV - millivolts

Table 7 Groundwater Laboratory Analytical Program Plant B Monitoring Program Third Quarter 2018 Sampling Event Olin Chemical Superfund Site Wilmington, Massachusetts

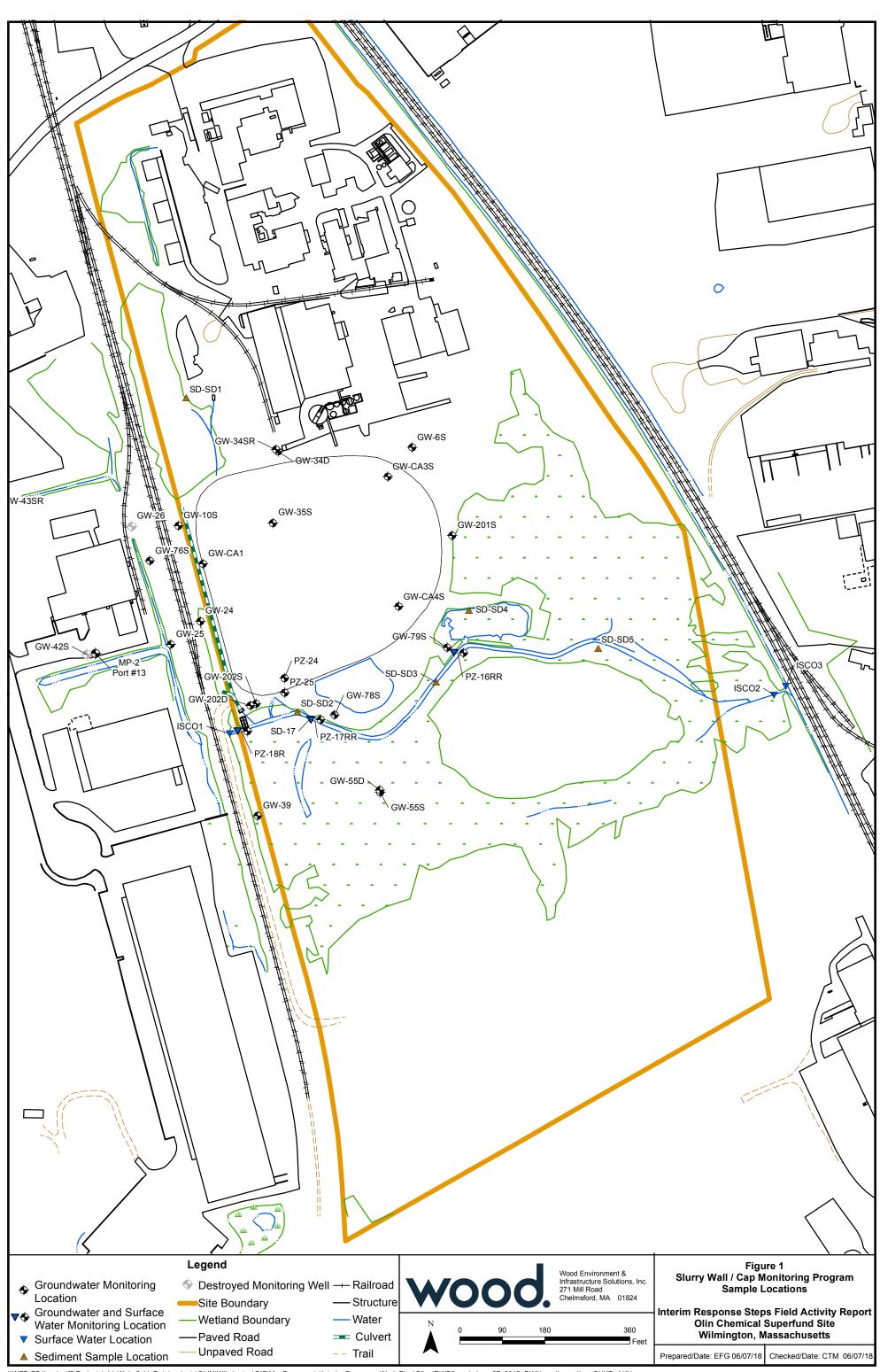
| Analyte | Analysis Method | Detection Limit | Units |
|---------------------------------------|--------------------|-----------------|--------|
| Volatile organic compounds (VOC) | | | |
| 2,4,4-Trimethyl-1-pentene | SW846 8260B | 0.40 | μg/L |
| 2,4,4-Trimethyl-2-pentene | SW846 8260B | 0.43 | μg/L |
| Semivolatile organic compounds (SVOC) | | | |
| N-nitrosodiphenylamine | SW846 8270C | 0.07 | μg/L |
| bis(2-ethylhexyl)phthalate | SW846 8270C | 0.42 | μg/L |
| Volatile Petroleum Hydrocarbons (VPH) | | | |
| C5-C8 Aliphatics | MA VPH | 1.5 | μg/L |
| C5-C8 Aliphatics, Unadjusted | MA VPH | 1.5 | μg/L |
| C9-C12 Aliphatics | MA VPH | 1.5 | μg/L |
| C9-C12 Aliphatics, Unadjusted | MA VPH | 1.5 | μg/L |
| C9-C10 Aromatics | MA VPH | 0.50 | μg/L |
| Methyl-tert-butyl-ether (MTBE) | MA VPH | 0.25 | μg/L |
| Benzene | MA VPH | 0.25 | μg/L |
| Ethylbenzene | MA VPH | 0.25 | μg/L |
| m,p-Xylene | MA VPH | 0.50 | μg/L |
| o-Xylene | MA VPH | 0.25 | μg/L |
| Toluene | MA VPH | 0.25 | μg/L |
| Naphthalene | MA VPH | 0.25 | μg/L |
| Physical/Inorganic Parameters | | | |
| Ammonia-Nitrogen | EPA 350.1 | 0.10 | mg/L |
| Ammonia-Nitrogen | (10-107-06-1-K) | 0.10 | IIIg/L |
| рН | SM 4500 H+ B | 0.10 | SU |
| Filtered Metals | | | |
| Iron, Filtered | SW846 6010B | 19 | μg/L |

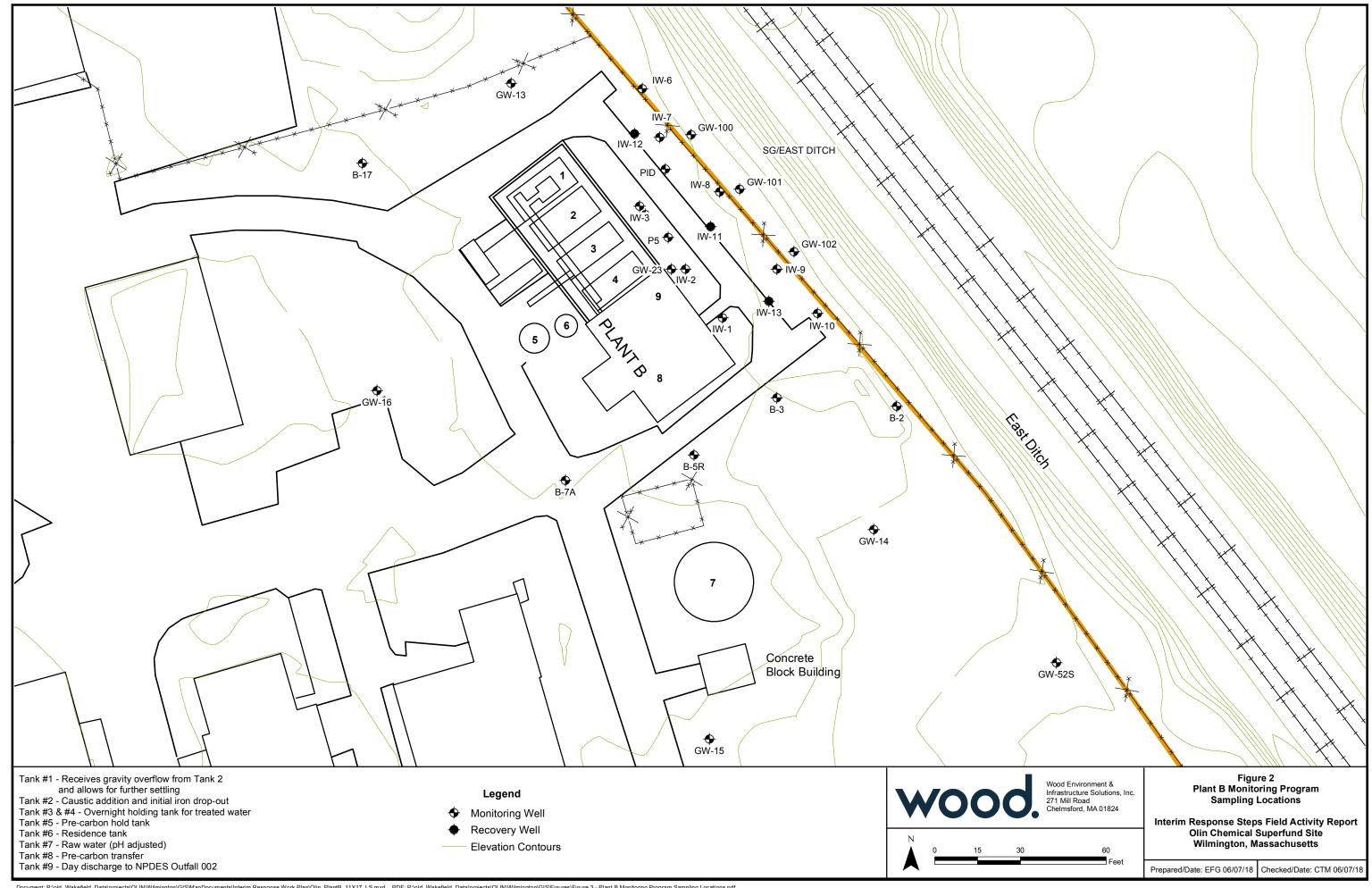
Prepared by: CTM 8/31/2018

Checked by: SAI 8/31/2018

Notes: $\mu g/L \text{ - micrograms per liter}$ mg/L - milligrams per liter SU - standard units

Figures





Appendix A

Field Data Records and Field Instrument Calibration Records

| | | 1018 | LD INSTI | RUMEN | TATION | CALIBRA | TION RECOR | RD C | | | |
|-----------------------------------|-----------------------|----------------|-----------------------|------------------|--------------------|------------------------------|------------------------|----------------|---------------------------------|--|--|
| PROJECT NAM | ИE: | | mical Superfund | | | | TASK NO: | | DATE: 8/6/2018 | | |
| PROJECT NUM | MBER: | | 61 | 107180016 | | | AMEC CREW: | Olin - BEG | | | |
| PROJECT LOC | CATION: | | 51 Eames | s St, Wilming | gton, MA | | SAMPLER NAME | | | | |
| WEATHER CO | ONDITIONS (AN | M): | | | | | SAMPLER SIGNA | TURE: | Field Form w/ Signature on File | | |
| WEATHER CO | ONDITIONS (PM | A): | | | | | CHECKED BY: | CTM | DATE: 9/14/2018 | | |
| MULTI-PARA | METER WAT | ER QUALI | TY METER | | | | | | | | |
| METER TYPE | Horiba | _ | | AM CALI | BRATION | | PM C | ALIBRATIO | N CHECK | | |
| MODEL NO. | U-52 | | Start Time: | | End Time: | | Start Time: | End | Time: | | |
| UNIT ID NO. | Olin | | | | | | | | | | |
| | | Units | Standard Value | Mete Valu | e | eptance Criteria (AM) | Standard Value | Meter Value | *Acceptance Criteria (PM) | | |
| | pH (4) | SU | 4.0 | 4.01 | | .1 pH Units | | | | | |
| | pH (7) | SU | 7.0 | | | .1 pH Units | 4.0 | 4.02 | +/- 0.3 pH Units | | |
| | pH (10) | SU | 10.0 | | | .1 pH Units | | | | | |
| | Redox | +/- mV | | 294 | | | | 309 | +/- 10 mV | | |
| | Conductivity | mS/cm | 4.49 | 4.50 | | % of standard | 4.49 | 4.49 | +/- 5% of standard | | |
| | OO (saturated) | % | 1) | | | % of standard | | | | | |
| D | OO (saturated) m | | | 7.93 | | .2 mg/L | | 8.68 | +/- 0.5 mg/L of standard | | |
| | DO (<0.1) | mg/L | < 0.1 | | | mg/L | | | C | | |
| | Temperature | °C | | 27.43 | 3 | | | 22.63 | | | |
| | Baro. Press. | mmHg | | | | | | | | | |
| TURBIDITY N | | | | Units | Standard | Meter | Standard | Meter | *Acceptance Criteria | | |
| METER TYPE | Horiba H. 52 | _ | | | Value | Value | Value | Value | (PM) | | |
| MODEL NO. UNIT ID NO. | U-52 Olin | _ | Standard | NTU | 0 | 0.0 | 10 | 0.0 | +/- 5% of standard | | |
| UNIT ID NO. | Oilli | _ | Standard | NTU | 20 | 0.0 | 20 | 0.0 | +/- 5% of standard | | |
| | | | Standard | NTU | 100 | | 100 | | | | |
| | | | Standard | NTU | 800 | | 800 | | | | |
| PHOTOIONIZ | ATION DETE | CTOR | Standard | | | | 000 | | | | |
| METER TYPE MODEL NO. | | | ackground | ppmv | <0.1 | | <0.1 | | within 5 ppmv of BG | | |
| UNIT ID NO. | | | Span Gas | ppmv | 100 | | 100 | | +/- 10% of standard | | |
| O ₂ -LEL 4 GAS | METER | | | | | | | | | | |
| METER TYPE | | _ | Methane | % | 50 | | 50 | | +/- 10% of standard | | |
| MODEL NO. | | _ | O_2 | % | 20.9 | | 20.9 | | +/- 10% of standard | | |
| UNIT ID NO. | | _ | H_2S | ppmv | 25 | | 25 | | +/- 10% of standard | | |
| | | | CO | ppmv | 50 | | 50 | | +/- 10% of standard | | |
| OTHER METI | ER | | | | | | | | | | |
| METER TYPE | | | | | | | | | See Notes Below for | | |
| MODEL NO. | | | | | | | | | Additional | | |
| UNIT ID NO. | | | | | | | | | Information | | |
| | | | <u> </u> | | | | | | mornation | | |
| X Equipm | ent calibrated withi | n the Acceptar | ice Criteria specifie | d for each of th | e parameters listo | ed above (see notes). | • | | | | |
| Equipm | nent (not) calibrated | within the Acc | ceptance Criteria sp | ecified for each | of the parameter | rs listed above**. | | | | | |
| MATERIALS I | RECORD | | | | | | Cal. Standard Lot N | | Exp. Date | | |
| | | | | | | pH (4) | Olin-Horiba Auto-Cal S | olution | Olin-Horiba Auto-Cal | | |
| Deionized Water | | | | | | pH (7) | | | | | |
| Lot#/Date | - | La | -h | | | pH (10) ORP | | | | | |
| rip Blank Sourd ample Preserva | | La | | | | Conductivity | | - | | | |
| Disposable Filter | | La | Pine 0.45µm | | | 0 Turb. Stan. | Olin-Horiba Cal Se | et. | Olin-Horiba Cal Set | | |
| Calibration Fluid | · I | ource: | | | | 20 Turb. Stan. | | | | | |
| | on Fluid (<0.1 m | | | | | 100 Turb. Stan. | | | - | | |
| - Other | • | _ | | | | 800 Turb. Stan. | | | | | |
| - Other | | | | | | PID Span Gas | | | | | |
| - Other | | | | | | O ₂ -LEL Span Gas | | | | | |
| | | | | | | DO | | | | | |
| NOTES: | | | | | | | | | | | |

^{* =} Unless otherwise noted, calibration procedures and acceptance criteria are in general accordance with USEPA Region 1 SOPs for Field Instrument Calibration (EQASOP-Field Calibration) and Low Stress Purging and Sampling (EQASOP-GW001), each dated 1/19/2010. Additional acceptance criteria obtained from instrument specific manufacturer recommendations.

^{** =} If meter reading is not within acceptance criteria, clean/replace probe and re-calibrate, or use calibrated back-up meter if available. If project requirements necessitate use of the instrument, clearly document any deviations from acceptance criteria on all data sheets and log book entries.

| | | | ELD INSTI | RUME | NTATIO | N CALIBRA | TION RECOR | D | |
|---------------------------|---------------------|-----------------------------|---------------------------------------|---------------|---------------------|------------------------------|-------------------------------------------------|----------------|---------------------------------|
| PROJECT NAM | ИE: | | emical Superfund | | | | TASK NO: | | DATE: 8/7/2018 |
| PROJECT NUM | MBER: | | 61 | 07180016 | | | AMEC CREW: | | Olin - BEG |
| PROJECT LOC | ATION: | | 51 Eames | St, Wilmi | ington, MA | | SAMPLER NAME: | | Brian Guichard |
| WEATHER CO | NDITIONS (A | M): | | | | | SAMPLER SIGNAT | ΓURE: | Field Form w/ Signature on File |
| WEATHER CO | NDITIONS (P | M): | | | | | CHECKED BY: | CTM | DATE: 9/14/2018 |
| MULTI-PARA | METER WAT | TER QUAL | ITY METER | | | <u> </u> | | | |
| METER TYPE | Horiba | • | | AM CAI | LIBRATION | | PM CA | LIBRATIO | N CHECK |
| MODEL NO. | U-52 | | Start Time: | | End Time: | | Start Time: | En | d Time: |
| UNIT ID NO. | Olin | | | | | | | | |
| | | Units | Standard Value | | eter *Ac llue | cceptance Criteria (AM) | Standard Value | Meter Value | *Acceptance Criteria (PM) |
| | pH (4) | SU | 4.0 | 4. | | 0.1 pH Units | | | |
| | pH (7) | SU | 7.0 | | | 0.1 pH Units | 4.0 | 4.01 | +/- 0.3 pH Units |
| | pH (10) | SU | 10.0 | | | 0.1 pH Units | | | |
| | Redox | +/- mV | | 20 | 68 +/- | 10 mV | | 233 | +/- 10 mV |
| | Conductivity | mS/cm | 4.49 | 4. | 49 +/- | 3% of standard | 4.49 | 4.45 | +/- 5% of standard |
| | O (saturated) | % | | | - +/- | 2% of standard | | | |
| D | O (saturated) r | ng/L ^{1 (see Char} | rt 1) _ | 9. | 24 +/- | 0.2 mg/L | - | 10.12 | ./ 0.5 / 6 / 1 1 |
| | DO (<0.1) | mg/L | <0.1 | | - < 0. | .5 mg/L | | | +/- 0.5 mg/L of standard |
| | Temperature | °C | | 22 | .25 | | | 21.87 | |
| | Baro. Press. | mmHg | | | | | | | - |
| TURBIDITY N | | | | | Standard | Meter | Standard | Meter | *Acceptance Criteria |
| METER TYPE | Horiba | | | Units | Value | Value | Value | Value | (PM) |
| MODEL NO. | U-52 | _ | | | , 4146 | , | , and | , unue | (2.1.2) |
| UNIT ID NO. | Olin | | Standard | NTU | 0 | 0.0 | 10 | 0.0 | +/- 5% of standard |
| | | | Standard | NTU | 20 | | 20 | - | = |
| | | | Standard | NTU | 100 | - | 100 | | - |
| | | | Standard | NTU | 800 | | 800 | _ | - |
| PHOTOIONIZ | ATION DETI | ECTOR | | | | | | | - |
| METER TYPE MODEL NO. | | | Background | ppmv | < 0.1 | | <0.1 | | within 5 ppmv of BG |
| UNIT ID NO. | | | Span Gas | ppmv | 100 | | 100 | | +/- 10% of standard |
| O ₂ -LEL 4 GAS | METER | | | | | | | | |
| METER TYPE | | | Methane | % | 50 | | 50 | | +/- 10% of standard |
| MODEL NO. | - | _ | O_2 | % | 20.9 | | 20.9 | | +/- 10% of standard |
| UNIT ID NO. | - | _ | H_2S | ppmv | 25 | | 25 | | +/- 10% of standard |
| | - | _ | CO | ppmv | 50 | | 50 | | +/- 10% of standard |
| OTHER METI | E.R | | | 11 | | | | | |
| METER TYPE | | | | | | | | | |
| MODEL NO. | | | | | | | | | See Notes Below for |
| UNIT ID NO. | | | | | | | | | - Additional |
| CIVII ID IVO. | | | | | | | | | - Information |
| X Equipm | ont colibrated with | nin the Assente | maa Cuitania anaaifia | d for each of | the meanwaters liv | sted above (see notes). | | | - |
| = | | | 1 | | • | | • | | |
| | | d within the At | cceptance Criteria sp | ecined for ea | acti of the paramet | ers fisted above**. | Cal Standard Lat Na | b | E-m Data |
| MATERIALS | KECOKD | | | | | pH (4) | Cal. Standard Lot No Olin-Horiba Auto-Cal So | | Exp. Date Olin-Horiba Auto-Cal |
| Deionized Water | Source | | | | | pH (7) | | - Iution | |
| Lot#/Date | | | | | | pH (10) | | | |
| Trip Blank Sour | | I | Lab | | | ORP | | | |
| Sample Preserva | | | Lab | | | Conductivity | | | |
| Disposable Filter | | | Pine 0.45µm | | | 0 Turb. Stan. | Olin-Horiba Cal Se | i | Olin-Horiba Cal Set |
| Calibration Fluid | | Source: | · · · · · · · · · · · · · · · · · · · | | | 20 Turb. Stan. | | | |
| - DO Calibrati | on Fluid (<0.1 | mg/L) | | | | 100 Turb. Stan. | | | |
| - Other | | | | | | 800 Turb. Stan. | | | |
| - Other | | | | | | PID Span Gas | | | |
| - Other | | | | | | O ₂ -LEL Span Gas | | | |
| | | | | | | DO | | | |
| NOTES: | | | | | | - | | | |

^{* =} Unless otherwise noted, calibration procedures and acceptance criteria are in general accordance with USEPA Region 1 SOPs for Field Instrument Calibration (EQASOP-Field Calibration) and Low Stress Purging and Sampling (EQASOP-GW001), each dated 1/19/2010. Additional acceptance criteria obtained from instrument specific manufacturer recommendations.

^{** =} If meter reading is not within acceptance criteria, clean/replace probe and re-calibrate, or use calibrated back-up meter if available. If project requirements necessitate use of the instrument, clearly document any deviations from acceptance criteria on all data sheets and log book entries.

| | | 1010 | LD INSTI | RUMEN | TATION | CALIBRA | TION RECOR | RD C | | | |
|-----------------------------------|-----------------------|-----------------|-----------------------|------------------|---------------------|--------------------------|------------------------|----------------|---------------------------------|--|--|
| PROJECT NAM | ИE: | | mical Superfund | | | | TASK NO: | | DATE: 8/8/2018 | | |
| PROJECT NUM | MBER: | | 61 | 107180016 | | | AMEC CREW: | - | | | |
| PROJECT LOC | CATION: | | 51 Eames | s St, Wilming | gton, MA | | SAMPLER NAME | | | | |
| WEATHER CO | ONDITIONS (AN | M): | | | | | SAMPLER SIGNA | TURE: | Field Form w/ Signature on File | | |
| WEATHER CO | ONDITIONS (PM | A): | | | | _ | CHECKED BY: | CTM | DATE: 9/14/2018 | | |
| MULTI-PARA | METER WAT | ER QUALI | TY METER | | | | | | | | |
| METER TYPE | | | | AM CALI | BRATION | | PM C | ALIBRATIO | N CHECK | | |
| MODEL NO. | U-52 | | Start Time: | | End Time: | | Start Time: | End | Time: | | |
| UNIT ID NO. | Olin | | | | | | | | | | |
| | | Units | Standard Value | Mete Valu | ie | eptance Criteria (AM) | Standard Value | Meter Value | *Acceptance Criteria (PM) | | |
| | pH (4) | SU | 4.0 | 4.00 | | 1 pH Units | | | | | |
| | pH (7) | SU | 7.0 | | | 1 pH Units | 4.0 | 4.02 | +/- 0.3 pH Units | | |
| | pH (10) | SU | 10.0 | - | | 1 pH Units | | •04 | | | |
| | Redox | +/- mV | 4.40 | 261 | | | 4.40 | 281 | +/- 10 mV | | |
| | Conductivity | mS/cm | 4.49 | 4.48 | | % of standard | 4.49 | 4.46 | +/- 5% of standard | | |
| | OO (saturated) | % | 1) | | | % of standard | | 10.05 | | | |
| D | OO (saturated) m | | | 9.15 | | 2 mg/L | | 10.85 | +/- 0.5 mg/L of standard | | |
| | DO (<0.1) | mg/L | < 0.1 | | | mg/L | | | C | | |
| | Temperature | °C | | 21.9 | 7 | | | 22.22 | | | |
| | Baro. Press. | mmHg | | | | | | | | | |
| TURBIDITY M | | | | Units | Standard | Meter | Standard | Meter | *Acceptance Criteria | | |
| METER TYPE | Horiba | _ | | | Value | Value | Value | Value | (PM) | | |
| MODEL NO. UNIT ID NO. | U-52 Olin | _ | Standard | NTU | 0 | 0.0 | 10 | 0.0 | +/- 5% of standard | | |
| UNIT ID NO. | Oilii | _ | Standard | NTU | 20 | 0.0 | 20 | - 0.0 | +/- 570 OI Stalldard | | |
| | | | Standard | NTU | 100 | | 100 | | | | |
| | | | Standard | NTU | 800 | | 800 | | | | |
| PHOTOIONIZ | ATION DETE | CTOR | - Standard | | | | | | | | |
| METER TYPE MODEL NO. | | | ackground | ppmv | <0.1 | | <0.1 | | within 5 ppmv of BG | | |
| UNIT ID NO. | | | Span Gas | ppmv | 100 | | 100 | | +/- 10% of standard | | |
| O ₂ -LEL 4 GAS | METER | | | | | | | | | | |
| METER TYPE | | | Methane | % | 50 | | 50 | | +/- 10% of standard | | |
| MODEL NO. | | <u></u> | O_2 | % | 20.9 | | 20.9 | | +/- 10% of standard | | |
| UNIT ID NO. | | _ | H_2S | ppmv | 25 | | 25 | | +/- 10% of standard | | |
| | | | CO | ppmv | 50 | | 50 | | +/- 10% of standard | | |
| OTHER METI | ER | | | | | | | | | | |
| METER TYPE | | | | | | | | | See Notes Below for | | |
| MODEL NO. | | | | | | | | | Additional | | |
| UNIT ID NO. | | | | | | | | | Information | | |
| | | | <u> </u> | | | | | | mornation | | |
| X Equipm | ent calibrated withi | in the Acceptan | ice Criteria specifie | d for each of th | ne parameters listo | ed above (see notes). | • | | | | |
| Equipm | nent (not) calibrated | within the Acc | ceptance Criteria sp | ecified for each | h of the parameter | s listed above**. | | | | | |
| MATERIALS 1 | RECORD | | | | | | Cal. Standard Lot N | | Exp. Date | | |
| | | | | | | pH (4) | Olin-Horiba Auto-Cal S | olution | Olin-Horiba Auto-Cal | | |
| Deionized Water | | | | | | pH (7) | | | | | |
| Lot#/Date | - | Τ. | -h | | | pH (10) | | | | | |
| rip Blank Sourd ample Preserva | | La La | | | | ORP Conductivity | | | | | |
| Disposable Filter | | L | Pine 0.45µm | | | 0 Turb. Stan. | Olin-Horiba Cal Se | et. | Olin-Horiba Cal Set | | |
| Calibration Fluid | · I | ource: | | | | 20 Turb. Stan. | | | | | |
| | on Fluid (<0.1 m | | | | | 100 Turb. Stan. | | | - | | |
| - Other | • | _ | | | | 800 Turb. Stan. | | | | | |
| - Other | | | | | | PID Span Gas | | | | | |
| - Other | | | | | | O2-LEL Span Gas | | | | | |
| | | | | | | DO | | | | | |
| NOTES: | | | | | | | | | | | |

^{* =} Unless otherwise noted, calibration procedures and acceptance criteria are in general accordance with USEPA Region 1 SOPs for Field Instrument Calibration (EQASOP-Field Calibration) and Low Stress Purging and Sampling (EQASOP-GW001), each dated 1/19/2010. Additional acceptance criteria obtained from instrument specific manufacturer recommendations.

^{** =} If meter reading is not within acceptance criteria, clean/replace probe and re-calibrate, or use calibrated back-up meter if available. If project requirements necessitate use of the instrument, clearly document any deviations from acceptance criteria on all data sheets and log book entries.

| | | | UCTURE SOLU W FLOW G | TIONS, INC. | TER SAI | MPLING | | | | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-------------------------------------|----------------------------------------------------|-------------------------------------------|---------------------------|------------------------------------------------------------|----------------------------------------------------------------|-------------------------------|----------------------------|-----------------------------|------------------|
| PROJECT | | | SITE, WILMINGTO | | | LL ID | GW-25 | |] | ROUND | NO. 3 |
| SAMPLE ID | | OC-GW-25 | | <u>'</u> | SITE 1 | | Superfund | | <u>.</u>] | | 8/7/2018 |
| TIME | START | 8:25 END | | Ħ | JOB NUMB | | 6107180016 | |] | BOTTLE TIME | 9:05 |
| - | EVEL / PUMP S | | | REMENT POINT | | | | | | | |
| QC SAN | | N/A | X TOF | P OF WELL RISER P OF PROTECTIVE HER | CASING | PROTECTIVE CASING STIC (FROM GRO | CKUP | FT. | PROTE(CASING DIFFER | à / WELL | FT. |
| INITIAL DEI TO WA | TER | 5.45 F | T. WELL D | | PID ~ 12.35 FT. AMBIENT | | R N/A | PPM | WELL DIAMET | ER 1.5 | IN. |
| FINAL DEI | | 5.77 F | T. SCREEN LENGTH | | FT. | PID WELL MOUTH | N/A | PPM | WELL INTEGR | YES | NO N/A |
| DRAWDO VOLU (final - ir | IME | 0.03 GA | AL. RATIO | OF DRAWDOWN \ | /OLUME | PRESSURE TO PUMP | N/A | PSI |] | CASING | |
| TOTAL V PURO (purge r | GED | 1.46 GA minute) x time du | AL. uration (minutes) x | 0.02 0.00026 gal/ml) | | REFILL TIMER SETTING | N/A | SEC. | DISCHA TIMER SETTING | N/A | SEC. |
| PURGE DA | ATA | <u> </u> | <u> </u> | | | | | | | | |
| TIME | DEPTH TO WATER (ft.) (0.3 ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. COND. (mS/cm) (3%) | pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | СОММ | ENTS |
| 8:30 | 5.68 | 140 | 20.43 | 0.923 | 6.31 | 1.59 | 11.7 | -34 | ~ 11 ft. | | |
| 8:35 | 5.73 | 140 | 18.26 | 0.963 | 6.60 | 1.02 | 0.10 | -125 | | | |
| 8:40 | 5.77 | 140 | 17.57 | 0.952 | 6.66 | 0.91 | 0.10 | -166 | | | |
| 8:45 8:50 | 5.77 5.77 | 140 140 | 16.79 16.18 | 0.913 0.889 | 6.58 6.40 | 0.92 | 0.10 | -179 -175 | | | |
| 9:00 | 5.77 | 140 | 15.94 | 0.889 | 6.37 | 0.93 | 0.10 | -170 | | | |
| 9:05 | 5.77 | 140 | 15.91 | 0.887 | 6.36 | 0.95 | 0.10 | -169 | | | |
| | Collect | Sample | | | | | | | | | |
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| TYPE O | NT DOCUMENT OF PUMP OF BLADDER MCO BLADDER OPUMP | | TYPE OF TUBING TEFLON OR HIGH DENSI X LDPE (Dedica | TEFLON LINED TY POLYETHYLEN | E | POI | F PUMP MATERIAL LYVINYL CHLORIDE NINLESS STEEL CON (Dedicated) | Ē | | TYPE OF BLADD TEFLON OTHER | ER MATERIAL |
| ANALYTIC | CAL PARAMET | ERS | | | | | | | | | |
| To Be Collected | d | | | HOD <u>MBER</u> | | RESERVATION ETHOD | VOLUME REQUIRED | <u>)</u> | SAMPLE COLLECTED | <u>)</u> | |
| VOCs: Trimethylpentenes 8260 B SVOCs: NDPA and BEHP 8270 C VPH MA VPH Dissolved Fe DIS. 6010B | | | | 0 C VPH 6010B | 4 [HC HN | CL / 4 DEG. C DEG. C CL / 4 DEG. C NO3 / 4 DEG. C | | | VPH Dis. | OCs H | |
| pH x Amı | monia-Nitrogen | | | 4500 H+B 07-06-1 | | DEG. C 2SO4 / 4 DEG. | 1 X 500 mL C 1 X 250 mL | | pH x Amr | monia-Nitrogen | |
| x Chl | X Chloride 300.0 | | | 4 [| DEG. C | 1 X 125 mL | | x Chlo | oride | | |
| _ = | x Sulfate x Specific Conductivity | | 300. SM : | 0 2510B | | DEG. C DEG. C | 1 X 125 mL 1 X 125 mL | | x Sulf | tate ecific Conductivity | |
| x Diss | Dissolved AI, Cr DIS. 6010B | | | HN | NO3 / 4 DEG. C | 1 X 250 mL | | x Dis. | Al, Cr | | |
| PURGE OBSERVATIONS | | | | | | LOCATION | SKETCH | | | | |
| PURGE WA | TER | _ | NUMBER OF GAL GENERATED | LONS ~ 1.46 g | al. | | | | | | |
| NOTES Chloride and Sulfate analysis collected in one 500mL bottle | | | | | | Sampled | by: BEG | | | \./C | od. |
| | | | | | | Prepared | • | | | AAC | , ,,, |
| SIGNATURE | : Fiel | ld Form w/ Siana | ature on File | | | Checked | by: CTM | | | | |

| | | | JCTURE SOLU W FLOW G | TIONS, INC. ROUNDWA | TER SAI | MPLING | | | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-------------------------------------|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------------------------------|-----------------------------------------------------------|--------------------------------------------------|---------------------------------------------|------------------------------------------------------------------------------------------------------------|-------------|
| PROJECT | OLIN CHEMICAL SUPERFUND SITE, WILMINGTON, MA | | | N, MA | WEL | L ID | GW-78S | | | ROUND N | IO. 3 |
| SAMPLE ID | | OC-GW-78S | | | SITE T | SITE TYPE Superfund | | | DATE 8/6/2018 | | |
| TIME | START | 10:20 END | 10:50 | | JOB NUMBE | ER | 6107180016 | | | BOTTLE TIME | 10:45 |
| QC SAM | EVEL / PUMP S MPLE CTED ID | N/A | X TOP | | | | | FT. | PROTECTIVE CASING / WELL DIFFERENCE N/A FT. | | |
| INITIAL DE TO WA | | 4.74 FT | T. WELL DE | PTH ~ 10.35 | FT. | PID AMBIENT AIR | N/A | PPM | WELL DIAMETE | ER 2 | IN. |
| FINAL DE TO WA | | 4.97 FT | ` ' | 9 | | PID WELL MOUTH | N/A | PPM | WELL | YES | NO N/A |
| DRAWDO VOLU (final - i | JME | 0.04 GA h} or x 0.65 {4-inch | AL. RATIO C | OF DRAWDOWN VO | OLUME | PRESSURE TO PUMP | N/A | PSI | | TY: CAP X CASING X LOCKED X COLLAR X | |
| TOTAL \ PUR((purge) | GED | 0.91 GA minute) x time du | L. Iration (minutes) x | 0.04 0.00026 gal/ml) | | REFILL TIMER SETTING | N/A | SEC. | DISCHAF TIMER SETTING | N/A | SEC. |
| PURGE D | | | | | | | | | | | |
| TIME | DEPTH TO WATER (ft.) (0.3 ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. COND. (mS/cm) (3%) | pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | COMME | ENTS |
| 10:25 | 4.97 | 140 | 22.24 | 1.38 | 6.25 | 5.87 | 503 | -3 | ~ 9 ft. | | |
| 10:30 10:35 | 4.97 4.97 | 140 140 | 21.57 | 1.21 1.19 | 6.31 | 0.84 | 395 271 | -11 5 | | | |
| 10:40 | 4.97 | 140 | 20.44 | 1.18 | 6.43 | 0.33 | 263 | 10 | | | |
| 10:45 | 4.97 Collect | 140 Sample | 20.36 | 1.18 | 6.44 | 0.17 | 257 | 12 | | | |
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| FOLUDME | NT DOCUMEN | TATION | | | | | | | | | |
| TYPE C | NT DOCUMEN' DE PUMP ED BLADDER MCO BLADDER EOPUMP | <u>.</u> | TYPE OF TUBING TEFLON OR X HIGH DENSI LDPE (Dedica | TEFLON LINED TY POLYETHYLEN | ΙE | POL STAI | PUMP MATERIAL YVINYL CHLORIDE NLESS STEEL CON (Dedicated) | | | TYPE OF BLADDE TEFLON OTHER | ER MATERIAL |
| ANALYTIO To Be Collecte | CAL PARAMET | ERS | METH NUMI | | | ESERVATION THOD | VOLUME REQUIRED | ! | SAMPLE COLLECTED | | |
| VOCs: Trimethylpentenes 8260 B SVOCs: NDPA and BEHP 8270 C VPH MA VPH Dissolved Fe DIS. 6010B pH SM 4500 H+B X Ammonia-Nitrogen 10-107-06-1 X Chloride 300.0 X Sulfate 300.0 X Specific Conductivity SM 2510B X Dissolved Al, Cr DIS. 6010B | | | 4 DI HCL HNC 4 DI H2S 4 DI 4 DI 4 DI | HCL / 4 DEG. C 3 X 40 mL 4 DEG. C 2 X 1 L AG HCL / 4 DEG. C 3 X 40 mL HNO3 / 4 DEG. C 1 X 500 mL HNO3 / 4 DEG. C 1 X 500 mL HNO3 / 4 DEG. C 1 X 500 mL | | | x Chlo | Cs Fe nonia-Nitrogen ride ate cific Conductivity | | | |
| PURGE WA | | | NUMBER OF GAL | | | LOCATION | SKETCH | | | | |
| NOTES Chloride and Sulfate analysis collected in one 500mL bottle SIGNATURE: Field Form w/ Signature on File | | | | | al | Sampled Prepared Checked | by: SAI | | | Wo | od. |

| | | | UCTURE SOLU W FLOW G | • | TER SA | MPLING | | | | | |
|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------------------------------|-----------------------------------------------------|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|-------------------------------|-----------------------------|-------------------------------------------------------------------------------------------------------------|-------------|
| PROJECT | OLIN CHEMICA | AL SUPERFUND S | SITE, WILMINGTON | N, MA | WEL | .L ID | GW-79S | | | ROUND N | NO. 3 |
| SAMPLE ID | | OC-GW-798 | S | | SITE T | YPE | Superfund | | | DATE | 8/7/2018 |
| TIME | START | 10:35 END | 11:10 | | JOB NUMBE | ER | 6107180016 | | | BOTTLE TIME | 11:00 |
| QC SAM | EVEL / PUMP S MPLE CTED ID | SETTINGS N/A | X TOP | EMENT POINT OF WELL RISER OF PROTECTIVE ER | CASING | PROTECTIVE CASING STIC (FROM GROU | KUP | FT. | PROTEC CASING DIFFERI | / WELL | FT. |
| INITIAL DE TO WA | | 4.61 F | | PTH ~ 11.25 | FT. | PID AMBIENT AIR | N/A | PPM | WELL DIAMETI | ER 2 | IN. |
| FINAL DE TO WA | | 4.64 F | (TOR) T. SCREEN LENGTH | 10 | FT. | PID WELL MOUTH | N/A | PPM | WELL | YES | NO N/A |
| DRAWDO VOLL (final - i | JME < | <0.01 GA | AL. RATIO C | DF DRAWDOWN V | OLUME | PRESSURE TO PUMP | N/A | PSI | INIEGN | ITY: CAP X CASING X LOCKED X COLLAR X | |
| TOTAL \ PUR((purge) | GED | 1.17 GA minute) x time du | AL. Irration (minutes) x | <0.01 0.00026 gal/ml) | | REFILL TIMER SETTING | N/A | SEC. | DISCHAI TIMER SETTING | N/A | SEC. |
| PURGE D | ATA | | | | | | | | | | |
| TIME | DEPTH TO WATER (ft.) (0.3 ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. COND. (mS/cm) (3%) | pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | СОММЕ | ENTS |
| 10:40 | 4.64 | 180 | 19.51 | 1.60 | 6.18 | 3.48 | 48.0 | -8 | ~ 9 ft. | | |
| 10:45 10:50 | 4.64 4.64 | 180 180 | 18.56 18.26 | 1.62 1.63 | 6.18 6.15 | 0.47 0.29 | 42.5 45.6 | -6 -8 | | | |
| 10:55 | 4.64 | 180 | 18.15 | 1.62 | 6.15 | 0.20 | 48.9 | -9 | | | |
| 11:00 | 4.64 Collect | 180 Sample | 18.05 | 1.62 | 6.14 | 0.17 | 53.4 | -9 | | | |
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| TYPE C | NT DOCUMEN DE PUMP ED BLADDER MCO BLADDER EOPUMP | _ | TYPE OF TUBING TEFLON OR X HIGH DENSI LDPE (Dedica | TEFLON LINED TY POLYETHYLEN | JE | POL STA | PUMP MATERIAL YVINYL CHLORIDE INLESS STEEL CON (Dedicated) | | | TYPE OF BLADDE | ER MATERIAL |
| ANALYTIC To Be Collecte | CAL PARAMET | ERS | | | | ESERVATION THOD | VOLUME REQUIRED | ļ. | SAMPLE COLLECTED | | |
| SVC VPI Dis pH X Am X Chl X Sul X Spe | De Be Collected METHOD NUMBER VOCs: Trimethylpentenes SVOCs: NDPA and BEHP SVOCs: NDPA and BEHP Dissolved Fe DIS. 6010B DH SM 4500 H+B X Ammonia-Nitrogen Chloride 300.0 Sulfate 300.0 Sulfate 300.0 Dissolved Al, Cr DIS. 6010B | | | | 4 D HCI HNV 4 D H2S 4 D 4 D 4 D | L / 4 DEG. C L / 4 DEG. C L / 4 DEG. C O3 / 4 DEG. C EG. C EG. C EG. C EG. C EG. C O3 / 4 DEG. C | 1 X 500 mL 1 X 500 mL 1 X 500 mL | | X Chlo | OCS I Fe nonia-Nitrogen oride ate cific Conductivity | |
| PURGE WA | TER | | NUMBER OF GAL | LONS | | LOCATION | SKETCH | | | | |
| | NTAINERIZED YES NO GENERATED ~ 1.17 gal. PTES Chloride and Sulfate analysis collected in one 500mL bottle | | | | | | by: BEG by: SAI by: CTM | | | WC | od. |

| | | & INFRASTRU CORD - LOV | | ITIONS, INC. ROUNDWA | TER SAI | MPLING | | | | | |
|----------------------------|------------------------------------------------------------|-------------------------------------|---------------------------|--------------------------------------------------|---------------------------|-----------------------------------------|---------------------------------------------------|-------------------------------|-----------------------------|------------------------------|----------|
| PROJECT | OLIN CHEMICA | AL SUPERFUND SI | ITE, WILMINGTO | N, MA | WEL | L ID | GW-202S | |] | ROUND NO. 3 | |
| SAMPLE ID | | OC-GW-2029 | S | | SITE T | YPE | Superfund | | | DATE 8/6/2018 | |
| TIME | START | 8:50 END | 9:25 | | JOB NUMBE | ER | 6107180016 | |] | BOTTLE TIME 9:20 | |
| QC SAI | MPLE CTED ID | SETTINGS N/A | X TOF | REMENT POINT P OF WELL RISER P OF PROTECTIVE HER | | PROTECTIVE CASING STIC (FROM GROU | KUP | FT. | PROTEC CASING DIFFERE | / WELL | |
| INITIAL DE TO WA | | 6.72 FT | | | | PID | | | WELL | | |
| FINAL DE | | 6.75 FT | (TOR) | ~ 13.3 | FT. | AMBIENT AIR PID WELL | N/A | PPM | DIAMETE WELL | ER <u>2 IN.</u> YES NO N/ | Α |
| DRAWDO VOLU | JME . | <0.01 GAI | | 0F DRAWDOWN V | OLUME | MOUTH PRESSURE TO PUMP | N/A | PPM | INTEGRI | TY: CAP X | <u>-</u> |
| TOTAL PUR | VOL. GED | 1.40 GAI | | <0.01 | | REFILL TIMER SETTING | N/A | SEC. | DISCHAF TIMER SETTING | RGE N/A SEC. | _ |
| PURGE D | ATA | | | | | | | | | | |
| TIME | DEPTH TO WATER (ft.) (0.3 ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. COND. (mS/cm) (3%) | pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | COMMENTS | |
| 8"55 | 6.75 | 180 | 18.47 | 0.852 | 6.69 | 0.59 | 1.3 | 105 | ~ 11 ft. | | |
| 9:00 | 6.75 | 180 | 18.18 | 0.853 | 6.68 | 0.55 | 0.1 | 109 | | | |
| 9:05 | 6.75 | 180 | 17.57 | 0.857 | 6.57 | 0.43 | 0.1 | 124 | | | |
| 9:10 9:15 | 6.75 6.75 | 180 180 | 16.81 16.78 | 0.860 | 6.46 | 0.23 | 0.1 0.1 | 138 139 | | | |
| 9:20 | 6.75 | 180 | 16.88 | 0.859 | 6.46 | 0.21 | 0.1 | 140 | | | |
| | | Sample | | | | | | | | | |
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| | INT DOCUMEN OF PUMP | | TYPE OF TUBING | <u> </u> | | TYPE OF | PUMP MATERIAL | | | TYPE OF BLADDER MATERIAL | |
| SI | ED BLADDER MCO BLADDER EOPUMP | | | - TEFLON LINED TY POLYETHYLEN ated) | NE | STAI | YVINYL CHLORIDE NLESS STEEL CON (Dedicated) | | | TEFLON OTHER | - |
| ANALYTIC To Be Collecte | CAL PARAMET | ERS | MET | HOD IBER | | ESERVATION | VOLUME REQUIRED | | SAMPLE COLLECTED | | |
| | | | | | | THOD | | | | | |
| | Cs: Trimethylpen OCs: NDPA and I | | 8260 8270 | | | _ / 4 DEG. C EG. C | 3 X 40 mL 2 X 1 L AG | | voc | | |
| VP | H ssolved Fe | | MA \ | /PH 6010B | | _ / 4 DEG. C O3 / 4 DEG. C | 3 X 40 mL 1 X 500 mL | | VPH Dis. | | |
| рН | | | | 1500 H+B | | EG. C | 1 X 500 mL | | pH | re | |
| | nmonia-Nitrogen | | | 07-06-1 n | | 6O4 / 4 DEG. C EG. C | 1 X 250 mL 1 X 500 mL | | X Amm | nonia-Nitrogen | |
| _ | X Chloride 300.0 X Sulfate 300.0 | | | | | | 1 X 500 mL | | X Sulfa | | |
| | ecific Conductivity ssolved Al, Cr | , | | 2510B 6010B | | EG. C O3 / 4 DEG. C | 1 X 500 mL 1 X 500 mL | | X Spec | cific Conductivity | |
| _ X DIS | ssoived Ai, Ci | | DIS. | 00100 | ПИС | 33 / 4 DEG. C | I A 500 IIIL | | A DIS. | AI, OI | |
| PURGE O | BSERVATION | S | | | | LOCATION | SKETCH | | | | |
| PURGE WA | | | NUMBER OF GA GENERATED | LLONS ~ 1.40 g | al. | | | | | | |
| NOTES | Chloride and Su | Ifate analysis collec | cted in one 500m | L bottle | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | Sampled I | • | | | Wood | ł |
| | | | | | | Prepared | | | | ***** | F+ |
| SIGNATUR | E: Fiel | d Form w/ Signat | ture on File | | | Checked I | oy: CTM | | | | |

| | | & INFRASTRU CORD - LOV | | JTIONS, INC. ROUNDWA | TER SAI | MPLING | | | | | |
|------------------------------|---------------------------------------------------|-------------------------------------|---------------------------|--------------------------------------------------|---------------------------|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------------|----------------------------------------------------------------|------------|
| PROJECT | OLIN CHEMICA | AL SUPERFUND S | ITE, WILMINGTO | N, MA | WEL | L ID | GW-202D | | | ROUND NO. 3 | ; |
| SAMPLE ID | | OC-GW-2021 | D | | SITE T | YPE | Superfund | | | DATE 8/6/2018 | |
| TIME | START | 9:25 END | 10:00 | | JOB NUMBE | ER | 6107180016 | |] | BOTTLE TIME 9:55 | |
| QC SAM | EVEL / PUMP S MPLE CTED ID | N/A | X TOF | REMENT POINT P OF WELL RISER P OF PROTECTIVE HER | CASING | PROTECTIVE CASING STIC (FROM GROU | KUP | FT. | PROTEC CASING DIFFERE | / WELL | |
| INITIAL DE TO WA | | 6.15 FT | | | | PID | N/A | 2014 | WELL | 0 " | |
| FINAL DE TO WA | | 6.17 FT | (TOR) SCREEN | | FT. | AMBIENT AIR PID WELL | N/A | PPM | DIAMETE WELL | YES NO 1 | N/A |
| DRAWDO VOLU (final - i | JME < | <0.01 GA | | OF DRAWDOWN VOTAL VOLUME PU | | MOUTH PRESSURE TO PUMP | N/A | PPM | INTEGRI | TY: CAP X | <u> </u> |
| TOTAL \ PUR(| GED | 1.40 GAI | | <0.01 0.00026 gal/ml) | | REFILL TIMER SETTING | N/A | SEC. | DISCHAF TIMER SETTING | N/A SEC. | |
| PURGE D | ATA | | | | | | | | | | |
| TIME | DEPTH TO WATER (ft.) (0.3 ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. COND. (mS/cm) (3%) | pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | COMMENTS | |
| 9:30 | 6.17 | 180 | 19.38 | 3.49 | 5.59 | 1.06 | 16.8 | 232 | ~ 20 ft. | | |
| 9:35 | 6.17 | 180 | 19.18 | 3.54 | 5.60 | 0.64 | 15.8 | 241 | | | |
| 9:40 9:45 | 6.17 6.17 | 180 180 | 18.11 17.29 | 3.59 3.56 | 5.64 5.64 | 0.12 | 13.1 12.2 | 248 249 | | | |
| 9:50 | 6.17 | 180 | 17.29 | 3.54 | 5.63 | 0.01 | 11.8 | 249 | | | |
| 9:55 | 6.17 | 180 | 17.20 | 3.54 | 5.63 | 0.01 | 12.3 | 248 | | | |
| | Collect | Sample | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| TYPE C | NT DOCUMEN' DE PUMP ED BLADDER MCO BLADDER EOPUMP | : <u>[</u> | | TEFLON LINED TY POLYETHYLEN | NE | POL' | PUMP MATERIAL YVINYL CHLORIDE NLESS STEEL CON (Dedicated) | | | TYPE OF BLADDER MATERIA TEFLON OTHER | |
| ANALYTIC To Be Collecte | CAL PARAMET | ERS | | HOD | | ESERVATION | VOLUME | | SAMPLE | | |
| | | | <u>NUM</u> | <u>IBER</u> | <u>ME</u> | <u>THOD</u> | REQUIRED | ! | COLLECTED | | |
| SV(| NUMBER | | | | | L / 4 DEG. C EG. C L / 4 DEG. C O3 / 4 DEG. C EG. C EG. C EG. C EG. C EG. C | 3 X 40 mL 2 X 1 L AG 3 X 40 mL 1 X 500 mL 1 X 500 mL 1 X 250 mL 1 X 500 mL 1 X 500 mL 1 X 500 mL 1 X 500 mL | | X Chlo | Cs Fe nonia-Nitrogen ride ate ific Conductivity | |
| PURGE O | BSERVATIONS | <u> </u> | | | | LOCATION | SKETCH | | | | |
| PURGE WA | | | NUMBER OF GA GENERATED | LLONS ~ 1.40 g | al. | | | | | | |
| NOTES | Chloride and Su | lfate analysis colle | cted in one 500m | L bottle | | | | | | | |
| SIGNATURI | SNATURE: Field Form w/ Signature on File | | | | | | by: BEG by: SAI by: CTM | | | WOO | J . |

| | | | W FLOW G | - | /ATER SA | MPLING | | | | |
|------------------------------|-------------------------------------------------------|-------------------------------------|----------------------------|----------------------------------------------------|---------------------------|----------------------------------------|-----------------------------------------------------------------|-------------------------------|---------------------------|---------------------------------------|
| PROJECT | OLIN CHEMIC | AL SUPERFUND | SITE, WILMINGTO | N, MA | WE | LL ID | PZ-16RRR | | | ROUND NO. 3 |
| SAMPLE ID |) | OC-PZ-16RF | RR | | SITE T | ГҮРЕ | Superfund | | | DATE 8/7/2018 |
| TIME | START | 10:15 ENI | D 10:35 | | JOB NUMB | BER | 6107180016 |) | | BOTTLE TIME 10:30 |
| QC SAI | EVEL / PUMP MPLE CTED ID | SETTINGS N/A | TOP | REMENT POINT P OF WELL RISE P OF PROTECTIVER | | PROTECTIVI CASING STIG (FROM GRO | CKUP | FT. | PROTE CASING DIFFER | i / WELL |
| INITIAL DE TO WA | | 3.79 F | T. WELL DE | | | PID AMBIENT AIF | N/A | DDM | WELL | 0.75 |
| FINAL DE TO WA | | Dry F | (TOR) T. SCREEN | | | PID WELL | | PPM | DIAMET WELL | YES NO N/A |
| DRAWDO VOLU (final - i | JME | N/A Ga | | DF DRAWDOWN | | MOUTH PRESSURE TO PUMP | N/A | PPM |] INTEGH | CAP |
| TOTAL \ PUR(purge | GED | | AL. uration (minutes) x | N/A 0.00026 gal/ml) | | REFILL TIMER SETTING | N/A | SEC. | DISCHA TIMER SETTIN | N/A SEC. |
| PURGE D | ATA | | | | | | | | | |
| TIME | DEPTH TO WATER (ft.) (0.3 ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. COND (mS/cm) (3%) | pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | COMMENTS |
| 10:20 | | | 24.11 | 1.79 | 6.27 | 6.87 | 89.7 | -80 | ~ 6 ft. | |
| 10:30 | Well Dry Collect | Sample I t Sample | Recharge | | | | | | | |
| | | | | | | | | | | |
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| | | 1 | | | | | | | | |
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| | | | | | | | | | | |
| FOLIIPME | NT DOCUMEN | ITATION | | | | | | | | |
| TYPE C | <u>DF PUMP</u> ED BLADDER MCO BLADDER EOPUMP | | | TEFLON LINED | | POI | F PUMP MATERIAL LYVINYL CHLORIDI AINLESS STEEL ICON (Dedicated) | ≣ | | TYPE OF BLADDER MATERIAL TEFLON OTHER |
| ANALYTIC To Be Collecte | CAL PARAME | ΓERS | METI <u>NUM</u> | | | RESERVATION ETHOD | VOLUME REQUIREI | <u>)</u> | SAMPLE COLLECTED | <u>)</u> |
| vo | Cs: Trimethylper | itenes | 8260 | В | НС | CL / 4 DEG. C | 3 X 40 mL | | VO | Cs |
| SV | OCs: NDPA and | BEHP | 8270 MA V | | | DEG. C CL / 4 DEG. C | 2 X 1 L AG 3 X 40 mL | | SVC | |
| Dis | solved Fe | | DIS. | 6010B | HN | NO3 / 4 DEG. C | 1 X 500 ml | | Dis. | |
| pH X Am | ımonia-Nitrogen | | | I500 H+B 07-06-1 | | DEG. C 2SO4 / 4 DEG. | 1 X 500 ml C 1 X 250 ml | | pH X Amı | monia-Nitrogen |
| X Chi | loride | | 300.0 | | 4 [| DEG. C | 1 X 500 ml | - | X Chl | oride |
| X Sul | itate ecific Conductivit | y | 300.0 SM 2 | 0 2510B | | DEG. C DEG. C | 1 X 500 ml 1 X 500 ml | | X Sulf | rate ecific Conductivity |
| X Dis | solved Al, Cr | | DIS. | 6010B | HN | NO3 / 4 DEG. C | 1 X 500 ml | - | X Dis. | Al, Cr |
| PURGE O | BSERVATION | S | | | | LOCATION | SKETCH | | | |
| PURGE WA | | NO | NUMBER OF GAL GENERATED | LLONS ~ 0.1 | gal. | | | | | |
| NOTES | | | lected in one 500m | L bottle | | | | | | |
| | Well went dry; | sample recharge | | | | | | | | |
| | | | | | | Sampled | l by: BEG | | | V40000 |
| | | | | | | Prepared | d by: SAI | | | Wood. |
| SIGNATURI | SNATURE: Field Form w/ Signature on File | | | | | | by: CTM | | | |

| | | | W FLOW G | - | | MPLING | | | | |
|------------------------------|--------------------------------------------------------------|-------------------------------------|----------------------------|-------------------------------------------------------|------------------------------|--------------------------------------|--------------------------------------------------------------------------|-------------------------------|----------------------------|---------------------------------------------|
| PROJECT | OLIN CHEMIC | AL SUPERFUND | SITE, WILMINGTO | N, MA | WE | ELL ID | PZ-17RRR | | | ROUND NO. 3 |
| SAMPLE ID | | OC-PZ17RF | ₹R | | SITE | TYPE | Superfund | | | DATE 8/7/2018 |
| TIME | START | 9:20 ENI | D 10:05 | <u> </u> | JOB NUME | BER | 6107180016 |) | | BOTTLE TIME 9:45 |
| QC SAI | EVEL / PUMP MPLE CTED ID | SETTINGS N/A | TOP | REMENT POINT P OF WELL RISI P OF PROTECT HER | ER | PROTECTIV CASING STI (FROM GRC | CKUP | FT. | PROTE(CASING DIFFER | / WELL |
| INITIAL DE TO WA | | 2.55 F | T. WELL DE | | 05 57 | PID | N/A | 2014 | WELL | 0.75 |
| FINAL DE TO WA | | Dry F | (TOR) T. SCREEN | | | AMBIENT AII | | PPM | DIAMET WELL | YES NO N/A |
| DRAWDO VOLU (final - i | JME | N/A G/ ch} or x 0.65 {4-inc | | 1 OF DRAWDOW OTAL VOLUME | | MOUTH PRESSURE TO PUMP | N/A | PPM |] INTEGR | TY: |
| TOTAL \ PUR(| GED | | AL. uration (minutes) x | N/A 0.00026 gal/ml) |) | REFILL TIMER SETTING | N/A | SEC. | DISCHA TIMER SETTING | RGE N/A SEC. |
| PURGE D | ATA | | | | | | | | | |
| TIME | DEPTH TO WATER (ft.) (0.3 ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. CONE (mS/cm) (3%) | D. pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | COMMENTS |
| 9:30 | | | 20.99 | 0.571 | 6.70 | 1.98 | 982 | 78 | ~ 6.5 ft. | |
| 9:45 | Well Dry | Sample I t Sample | Recharge | | | | | | | |
| 9.45 | Collec | t Sample | | | | | | | | |
| | | | | | | | | | | |
| | | 1 | | | | | | | | |
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| | | | | | | | | | | |
| TYPE C | NT DOCUMEN DE PUMP ED BLADDER MCO BLADDER EOPUMP | NTATION | | TEFLON LINE | | PO ST/ | F PUMP MATERIAL LYVINYL CHLORIDI AINLESS STEEL ICON (Dedicated) | Ē | | TYPE OF BLADDER MATERIAL TEFLON OTHER OTHER |
| ANALYTIC To Be Collecte | CAL PARAME | TERS | METI NUM | | | RESERVATION ETHOD | VOLUME REQUIRE |) | SAMPLE COLLECTED | |
| □vo | Cs: Trimethylper | ntenes | 8260 | | _ | CL / 4 DEG. C | 3 X 40 mL | _ | voc | • |
| SV | OCs: NDPA and | | 8270 | С | | DEG. C | 2 X 1 L AG | | SVC | OCs |
| VPI Dis | H solved Fe | | MA V DIS. | /PH 6010B | | CL / 4 DEG. C NO3 / 4 DEG. (| 3 X 40 mL 1 X 500 ml | _ | VPF Dis. | |
| pH | ımonia-Nitrogen | | | I500 H+B 07-06-1 | | DEG. C | 1 X 500 ml | | pH | nonia-Nitrogen |
| X Chi | | | 300.0 | | | 2SO4 / 4 DEG. DEG. C | C 1 X 250 ml 1 X 500 ml | | X Chlo | |
| X Sul | lfate ecific Conductivit | v | 300.0 SM 2 | 0 2510B | | DEG. C DEG. C | 1 X 500 ml 1 X 500 ml | | X Sulf | ate cific Conductivity |
| | solved Al, Cr | , | | 6010B | | NO3 / 4 DEG. (| | | X Dis. | |
| PURGE O | BSERVATION | IS | | | | LOCATION | I SKETCH | | | |
| PURGE WA | | NO | NUMBER OF GAL GENERATED | | 1 gal. | | | | | |
| NOTES | | | ected in one 500m | L bottle | | | | | | |
| | well went dry; | sample recharge | | | | | | | | |
| | | | | | | Sampleo | l by: BEG | | | 3,4000 |
| | | | | | | | d by: SAI | | | WOOD |
| SIGNATI IDI | NATURE: Field Form w/ Signature on File | | | | | | l by: CTM | | | |

| | | & INFRASTRU CORD - LOV | | - | ATER SA | MPLING | | | | | |
|----------------------------|--------------------------------------------------------------------------------------------|-------------------------------------|----------------------------|-----------------------------------------------------|---------------------------|-----------------------------------------|-------------------------------------------------|-------------------------------|-----------------------------|---------------------------|------------|
| PROJECT | OLIN CHEMICA | AL SUPERFUND SI | TE, WILMINGTO | N, MA | WEL | L ID | PZ-18R | |] | ROUND NO | D. 3 |
| SAMPLE ID |) | OC-PZ-18R | | | SITE T | YPE | Superfund | |] | DATE 8 | /7/2018 |
| TIME | START | 7:45 END | 8:20 | | JOB NUMBE | ER | 6107180016 | | | BOTTLE TIME | 8:10 |
| QC SA | EVEL / PUMP S MPLE CTED ID | SETTINGS N/A | TOP | EMENT POINT OF WELL RISER OF PROTECTIVE ER | | PROTECTIVE CASING STIC (FROM GROU | | FT. | PROTEC CASING DIFFERE | / WELL | FT. |
| INITIAL DE TO WA | | 2.01 FT. | | | | PID | | | WELL | | |
| FINAL DE | | 2.89 FT. | (TOR) SCREEN | ~ 5.99 | FT. | AMBIENT AIR PID WELL | N/A | PPM | DIAMETE WELL | ER 1 YES | NO N/A |
| DRAWDO | OWN | | LENGTH | 1.6 | FT. | MOUTH | N/A | PPM | INTEGRI | TY: CAP X CASING X | |
| VOLU (final - i | | 0.03 GAL th} or x 0.65 {4-inch | | OF DRAWDOWN \ OTAL VOLUME PU | | PRESSURE TO PUMP | N/A | PSI | | COLLAR | X |
| TOTAL ' PUR (purge | GED | 0.72 GAL r minute) x time dur | | 0.04 0.00026 gal/ml) | | REFILL TIMER SETTING | N/A | SEC. | DISCHAF TIMER SETTING | N/A | SEC. |
| PURGE D | | L DUDOS DATE L | TE. 10 | 0050 0010 | | I DIGG GO I | TURRIETY | Loppys | | | |
| TIME | DEPTH TO WATER (ft.) (0.3 ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. COND. (mS/cm) (3%) | pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | COMMEN | NTS |
| 7:50 | 2.81 | 110 | 22.90 | 3.77 | 6.05 | 11.02 | 12.2 | -107 | ~ 5.5 ft. | | |
| 7:55 | 2.84 | 110 | 22.05 | 2.91 | 6.14 | 8.24 | 11.6 | -114 | | | |
| 8:00 8:05 | 2.86 | 110 | 21.97 | 2.05 | 6.23 6.24 | 7.55 7.29 | 11.6 11.5 | -121 -122 | | | |
| 8:10 | 2.89 | 110 | 21.92 | 2.03 | 6.25 | 7.19 | 11.9 | -124 | | | |
| | Collect | Sample | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
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| | | | | | | | | | | | |
| TYPE (| NT DOCUMEN DE PUMP ED BLADDER MCO BLADDER | | | i TEFLON LINED TY POLYETHYLEI | NE | POL | PUMP MATERIAL YVINYL CHLORIDE NLESS STEEL | | | TYPE OF BLADDE | R MATERIAL |
| X GI | EOPUMP | | X LDPE (Dedica | ated) | | X SILIC | ON (Dedicated) | | | | |
| ANALYTIC To Be Collecte | CAL PARAMET | ERS | METI <u>NUM</u> I | | | ESERVATION THOD | VOLUME REQUIRED | ! | SAMPLE COLLECTED | | |
| | Cs: Trimethylpen | | 8260 8270 | | | L / 4 DEG. C EG. C | 3 X 40 mL 2 X 1 L AG | | VOC | | |
| VP | | | MA V | | HC | L / 4 DEG. C O3 / 4 DEG. C | 3 X 40 mL 1 X 500 mL | | VPH | | |
| рН | | | SM 4 | 500 H+B | 4 D | EG. C | 1 X 500 mL | | рН | | |
| X Am | imonia-Nitrogen Ioride | | 10-10 300.0 |)7-06-1) | | SO4 / 4 DEG. C EG. C | 1 X 250 mL 1 X 500 mL | | X Chlo | | |
| | X Sulfate 300.0 X Specific Conductivity SM 2510B | | | | | EG. C EG. C | 1 X 500 mL 1 X 500 mL | | X Sulfa | ate cific Conductivity | |
| | X Dissolved Al, Cr DIS. 6010B | | | | | | 1 X 500 mL | | X Dis. | | |
| PURGE O | BSERVATION | S | | | | LOCATION | SKETCH | | | | |
| PURGE WA | | | NUMBER OF GAL SENERATED | LONS 0.72 g | gal. | | | | | | |
| NOTES | Chloride and Su | Ifate analysis collec | cted in one 500ml | _ bottle | | | | | | | |
| | | | | | | Sampled I | oy: BEG | | | W/0 | od. |
| | | | | | | Prepared | | | | W U | . |
| SIGNATUR | E: Fiel | d Form w/ Signat | ure on File | | | Checked I | by: CTM | | | | |

| | | & INFRASTRU CORD - LOV | | • | ATER SA | MPLING | | | | | |
|----------------------------|--------------------------------------------------------------|------------------------------------------------------|----------------------------|--------------------------------------------|---------------------------|-----------------------------------------|--------------------------------------------------------------------|-------------------------------|-----------------------------|---------------------------------------|----|
| PROJECT | OLIN CHEMICA | AL SUPERFUND SI | ITE, WILMINGTO | N, MA | WEL | L ID | PZ-24 | | | ROUND NO. 3 | |
| SAMPLE ID | | OC-PZ-24 | | | SITE T | YPE | Superfund | | | DATE 8/6/2018 | |
| TIME | START | 7:45 END | 8:20 | | JOB NUMBE | ER | 6107180016 | |] | BOTTLE TIME 8:15 | |
| QC SAI | EVEL / PUMP S MPLE CTED ID | SETTINGS N/A | X TOP | EMENT POINT OF WELL RISEF OF PROTECTIVE ER | | PROTECTIVE CASING STIC (FROM GROU | KUP | FT. | PROTEC CASING DIFFERE | / WELL | |
| INITIAL DE TO WA | | 8.97 FT. | | | | PID | | | WELL | | |
| FINAL DE TO WA | | 9.09 FT. | (TOR) SCREEN | ~ 17.65 | 5 FT. | AMBIENT AIR | N/A | PPM | DIAMETE WELL | | /A |
| DRAWDO VOLU | JME | 0.01 GAL | | 10 OF DRAWDOWN | | MOUTH PRESSURE | N/A | PPM | INTEGRI | TY: CAP X | _ |
| TOTAL V | VOL. GED | ch} or x 0.65 {4-inch 0.94 GAL r minute) x time dur | | 0.01 0.0026 gal/ml) | URGED | TO PUMP REFILL TIMER SETTING | N/A | PSI SEC. | DISCHAF TIMER SETTING | RGE N/A SEC. | _ |
| PURGE D | ATA | <u> </u> | | | | | | | | | |
| TIME | DEPTH TO WATER (ft.) (0.3 ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. COND. (mS/cm) (3%) | pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | COMMENTS | |
| 7:50 | 9.08 | 120 | 24.36 | 1.85 | 5.96 | 9.14 | 4.0 | -11 | ~ 16 ft. | | |
| 7:55 | 9.09 | 120 | 21.63 | 1.78 | 6.55 | 6.53 | 25.7 | -86 | | | |
| 8:00 | 9.09 | 120 120 | 21.09 | 1.77 1.77 | 6.69 | 6.31 | 32.7 42.0 | -86 -87 | | | |
| 8:05 8:10 | 9.09 | 120 | 20.00 | 1.77 | 6.78 | 6.10 | 42.4 | -87 | | | |
| 8:15 | 9.09 | 120 | 20.27 | 1.76 | 6.87 | 6.12 | 43.1 | -88 | | | |
| | Collect | Sample | | | | | | | | | |
| | | | | | | | | | | | |
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| | | | | | | | | | | | |
| | | | | | | | | | | | |
| TYPE C | NT DOCUMEN DE PUMP ED BLADDER MCO BLADDER EOPUMP | | | - TEFLON LINED TY POLYETHYLE | - NE | POL STAI | PUMP MATERIAL YVINYL CHLORIDE NLESS STEEL CON (Dedicated) | : | | TYPE OF BLADDER MATERIAL TEFLON OTHER | = |
| ANALYTIC To Be Collecte | CAL PARAMET | ERS | METI NUM | | | ESERVATION THOD | VOLUME REQUIRED | <u>!</u> | SAMPLE COLLECTED | | |
| □vo | Cs: Trimethylpen | tenes | 8260 | В | HC | L / 4 DEG. C | 3 X 40 mL | | Voc | os | |
| SV | OCs: NDPA and I | | 8270 | | | EG. C | 2 X 1 L AG | | SVO | Cs | |
| VP Dis | H solved Fe | | MA V DIS. | PH 6010B | | L / 4 DEG. C O3 / 4 DEG. C | 3 X 40 mL 1 X 500 mL | | VPH Dis. | | |
| □pH | monia-Nitrogen | | | 500 H+B 07-06-1 | | EG. C | 1 X 500 mL | | pH | oonia Nitragan | |
| X Am | | | 300.0 | | | SO4 / 4 DEG. 0 EG. C | 1 X 250 mL 1 X 500 mL | | X Chlo | nonia-Nitrogen ride | |
| | X Sulfate 300.0 X Specific Conductivity SM 2510B | | | | | EG. C EG. C | 1 X 500 mL 1 X 500 mL | | X Sulfa | ate cific Conductivity | |
| | solved Al, Cr | | | 6010B | | O3 / 4 DEG. C | 1 X 500 mL | | X Dis. | | |
| DURGE O | BSERVATION | <u> </u> | | | | LOCATION | SKETCH | | | | |
| PURGE WA | ATER | | NUMBER OF GAI GENERATED | LONS ~ 0.94 | gal. | LOCATION | J., E. I V. I | | | | |
| NOTES | Chloride and Su | ılfate analysis collec | cted in one 500m | L bottle | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | Sampled | • | | | WOOO | 4 |
| | | | | | | Prepared Checked | | | | ***** | Fo |
| SIGNATURI | E: Fiel | d Form w/ Signat | ure on File | | | опескеа | uy. GTW | | | | |

| | | & INFRASTRU CORD - LOV | | • | TER SA | MPLING | | | | | |
|----------------------------|-------------------------------------------------------------------------------------------|-------------------------------------|----------------------------|-----------------------------------------------------|---------------------------|-----------------------------------------|-----------------------------------------------------------|-------------------------------|-----------------------------|---------------------------------------|----------|
| PROJECT | OLIN CHEMICA | AL SUPERFUND SI | ITE, WILMINGTO | N, MA | WEL | L ID | PZ-25 | | | ROUND NO. 3 | |
| SAMPLE ID | | OC-PZ-25 | | | SITE T | YPE | Superfund | |] | DATE 8/6/2018 | |
| TIME | START | 8:20 END | 8:50 | | JOB NUMBI | ER | 6107180016 | | | BOTTLE TIME 8:45 | |
| QC SA | EVEL / PUMP S MPLE CTED ID | N/A | X TOP | EMENT POINT OF WELL RISER OF PROTECTIVE ER | | PROTECTIVE CASING STIC (FROM GROU | KUP | FT. | PROTEC CASING DIFFERE | / WELL | |
| INITIAL DE TO WA | | 8.58 FT | | | | PID | N/A | 2011 | WELL | -5 45 " | |
| FINAL DE | | 8.59 FT | (TOR) SCREEN | ~ 17.75 | FT. | AMBIENT AIR PID WELL | N/A | PPM | DIAMETE WELL | ER <u>1.5 IN.</u> YES NO N/ | /A |
| DRAWDO VOLU | JME < | <0.01 GAI | | 10 OF DRAWDOWN VOTAL VOLUME PU | | MOUTH PRESSURE TO PUMP | N/A | PPM | INTEGRI | TY: CAP X | <u>-</u> |
| TOTAL PUR | /OL. | 0.91 GAI | L. | <0.01 | | REFILL TIMER SETTING | N/A | SEC. | DISCHAF TIMER SETTING | RGE N/A SEC. | _ |
| PURGE D | ATA | | | | | | | | | | |
| TIME | DEPTH TO WATER (ft.) (0.3 ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. COND. (mS/cm) (3%) | pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | COMMENTS | |
| 8:25 | 8.59 | 140 | 19.92 | 1.13 | 6.70 | 5.34 | 4.8 | 20 | ~ 15 ft. | | |
| 8:30 | 8.59 | 140 | 19.46 | 1.13 | 6.73 | 2.73 | 6.5 | 22 | | | |
| 8:35 8:40 | 8.59 8.59 | 140 | 18.61 18.04 | 1.14 1.15 | 6.78 6.80 | 1.68 | 12.9 12.7 | 23 23 | | | |
| 8:45 | 8.59 | 140 | 18.02 | 1.14 | 6.81 | 1.60 | 13.3 | 23 | | | |
| | Collect | Sample | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| TYPE (| NT DOCUMEN' DE PUMP ED BLADDER MCO BLADDER EOPUMP |] [<u></u> | | TEFLON LINED TY POLYETHYLE | NE | POL' | PUMP MATERIAL YVINYL CHLORIDE NLESS STEEL CON (Dedicated) | : | | TYPE OF BLADDER MATERIAL TEFLON OTHER | - |
| ANALYTIC To Be Collecte | CAL PARAMET | ERS | METI NUM | | | ESERVATION THOD | VOLUME REQUIRED |) | SAMPLE COLLECTED | | |
| □vo | Cs: Trimethylpen | tenes | 8260 | | | L / 4 DEG. C | 3 X 40 mL | - | voc | Ss. | |
| sv | OCs: NDPA and E | | 8270 | С | 4 D | EG. C | 2 X 1 L AG | | SVO | Cs | |
| VP Dis | H solved Fe | | MA V DIS. | PH 6010B | | L / 4 DEG. C O3 / 4 DEG. C | 3 X 40 mL 1 X 500 mL | | VPH Dis. | | |
| DH X Am | | | | 500 H+B 07-06-1 | | DEG. C SO4 / 4 DEG. C | 1 X 500 mL 1 X 250 mL | | DH X Amm | nonia-Nitrogen | |
| X Ch | X Ammonia-Nitrogen 10-107-06-1 X Chloride 300.0 | | | | | EG. C | 1 X 500 mL | | X Chlo | ride | |
| | X Sulfate 300.0 X Specific Conductivity SM 2510B | | | | | EG. C EG. C | 1 X 500 mL 1 X 500 mL | | X Sulfa | ate cific Conductivity | |
| X Dis | solved Al, Cr | | DIS. | 6010B | HN | O3 / 4 DEG. C | 1 X 500 mL | | X Dis. | Al, Cr | |
| PURGE O | BSERVATIONS | S | | | | LOCATION | SKETCH | | | | |
| PURGE WA | | | NUMBER OF GAL GENERATED | LONS 0.91 g | gal. | | | | | | |
| NOTES | Chloride and Su | lfate analysis collec | cted in one 500m | _ bottle | | | | | | | |
| | | | | | | Sampled | | | | Wood | ł |
| | | | | | | Prepared Checked | | | | ****** | F÷ |
| SIGNATUR | E: Fiel | d Form w/ Signat | ture on File | | | SHOOKEU | -, | | | | |

| | | & INFRASTRU CORD - LOV | | ITIONS, INC. | ATER SAI | MPLING | | | | | |
|----------------------------|-------------------------------------------------------------|-------------------------------------|---------------------------|--------------------------------------------------|---------------------------|-----------------------------------------|-------------------------------------------------|-------------------------------|-----------------------------|--------------------------------------|--------------|
| PROJECT | OLIN CHEMICA | AL SUPERFUND S | SITE, WILMINGTO | N, MA | WEL | L ID | GW-16R | | | ROUND NO. | 3 |
| SAMPLE ID | | OC-GW-16F | 3 | | SITE T | YPE | Superfund | | | DATE 8/8/201 | 8 |
| TIME | START | 8:15 END | 9:00 | | JOB NUMBE | ER | 6107180016 | |] | BOTTLE TIME 8:45 | |
| QC SAM | EVEL / PUMP S MPLE CTED ID | SETTINGS N/A | X TOP | REMENT POINT P OF WELL RISER P OF PROTECTIVE HER | | PROTECTIVE CASING STIC (FROM GROU | KUP | FT. | PROTEC CASING DIFFERE | / WELL | |
| INITIAL DE TO WA | | 12.09 FT | | | | PID | N//A | | WELL | | 7 |
| FINAL DE TO WA | | 12.70 FT | (TOR) T. SCREEN | ~ 17.2 | FT. | AMBIENT AIR PID WELL | N/A | PPM | DIAMETE WELL | ER 2 IN. YES NO | N/A |
| DRAWDO VOLU | JME | 0.09 GA | | 5 OF DRAWDOWN VOTAL VOLUME PU | | MOUTH PRESSURE TO PUMP | N/A | PPM | INTEGRI | TY: CAP X CASING X LOCKED X COLLAR X | = |
| TOTAL \ | /OL. | 0.94 GA | L. | 0.10 | TIGED . | REFILL TIMER SETTING | N/A | SEC. | DISCHAF TIMER SETTING | RGE N/A SEC | <u></u> |
| PURGE D | ATA | | | | | | | | | | |
| TIME | DEPTH TO WATER (ft.) (0.3 ft.) | PURGE RATE (ml/min) (100-400) | TEMP. (deg. C) (3%) | SPEC. COND. (mS/cm) (3%) | pH (units) (+/- 0.1 | DISS. O2 (mg/L) (10%)(>0.5) | TURBIDITY (NTU) (10%) (> 5) | ORP/Eh (mV) (+/- 10 mV) | SAMPLE DEPTH (ft.) | COMMENTS | |
| 8:20 | 12.41 | 140 | 20.50 | 0.213 | 6.05 | 1.86 | 51.6 | -18 | ~ 16 ft. | | |
| 8:25 | 12.56 | 120 | 20.06 | 0.193 | 6.32 | 0.83 | 23.5 | -36 | | | |
| 8:30 | 12.67 | 120 | 19.68 | 0.178 | 6.54 | 0.48 | 9.2 | -31 -26 | | | |
| 8:35 8:40 | 12.69 12.69 | 120 120 | 19.57 19.57 | 0.174 0.172 | 6.71 | 0.34 | 4.3 | -26 | | | |
| 8:45 | 12.70 | 120 | 19.52 | 0.172 | 6.81 | 0.22 | 4.8 | -21 | | | |
| | Collect | Sample | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| TYPE C | NT DOCUMEN' DF PUMP ED BLADDER MCO BLADDER | _ | | E TEFLON LINED | NE | POL | PUMP MATERIAL YVINYL CHLORIDE NLESS STEEL | | <u> </u> | TYPE OF BLADDER MATE | <u>ERIAL</u> |
| X GE | EOPUMP | | LDPE (Dedic | ated) | | X SILIC | CON (Dedicated) | | | | |
| ANALYTIC To Be Collecte | CAL PARAMET | ERS | MET <u>NUM</u> | | | ESERVATION THOD | VOLUME REQUIRED | | SAMPLE COLLECTED | | |
| X SVO | | | 8260 8270 MA \ | C /PH | 4 D HCI | L / 4 DEG. C EG. C L / 4 DEG. C | 3 X 40 mL 2 X 1 L AG 3 X 40 mL | | X VOC X SVO X VPH | Cs | |
| X Dis | solved Fe | | | 6010B I500 H+B | | 03 / 4 DEG. C EG. C | 1 X 500 mL 1 X 500 mL | | X Dis. | Fe | |
| | monia-Nitrogen loride | | | 07-06-1 | | SO4 / 4 DEG. C | | | X Amm Chlo | nonia-Nitrogen | |
| | fate | | 300.0 300.0 | | | EG. C EG. C | 1 X 500 mL 1 X 500 mL | | Sulfa | | |
| | Specific Conductivity SM 2510B Dissolved Al, Cr DIS. 6010B | | | | | EG. C O3 / 4 DEG. C | 1 X 500 mL 1 X 500 mL | | | cific Conductivity AI, Cr | |
| LIDIS | Solved AI, CI | | DIS. | 00100 | Піл | 03 / 4 DEG. C | 1 X 300 IIIL | | Dis. | AI, CI | |
| PURGE O | BSERVATION: | | NUMBER OF GAI | LLONS | | LOCATION | SKETCH | | | | |
| CONTAINER | RIZED YES | NO | GENERATED | ~ 0.94 (| gal. | | | | | | |
| NOTES | | | | | | | | | | | |
| | | | | | | Sampled Prepared | • | | | WOO | d. |
| SIGNATURE | E: Fiel | d Form w/ Signa | ture on File | | | Checked | by: CTM | | | | |

Appendix B

Chain of Custody Records

Client Contact:

Client Information

Mr. Brian Guichard

Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

Sampler: Quentar d

9786586121

Lab PM: Mason, Becky C

becky.mason@testamericainc.com

E-Mail:

360325-Boston Carrier Tracking No(s)



COC No:

Page 1 of 2

480-116093-22977.1

| Company: Olin Corporation | | | | | | - Average | | | - | Ana | alysis Requ | E | | | Job#: | |
|-------------------------------------------------------------------|------------------------|----------------|---------------------------------------|---------------------------------------------|---------------|-----------|------------------|-----------------|-------------------------------|-------------------|----------------|------|-------------------|--------------|-------------------------------------------|-----------------------------------------|
| Address: | Due Date Requeste | ed: | | | | | T | T | T | T | | E | - 10 | Tall | Preservation Cod | es: |
| 51 Eames street City: Wilmington | TAT Requested (da | ays): | | | | | | | | | | 480- | 140036 COC | | A - HCL B - NaOH C - Zn Acetate | M - Hexane N - None O - AsNaO2 |
| State, Zip: MA, 01887 | | | | | | | | | 1 | | | | | | D - Nitric Acid E - NaHSO4 F - MeOH | P - Na2O4S Q - Na2SO3 R - Na2S2O3 |
| Phone: 423-336-4012(Tel) | PO#: REWI0025 | | | | | | | | 1 | | | | | | G - Amchlor H - Ascorbic Acid | S - H2SO4 T - TSP Dodecahydrate |
| Email: beguichard@olin.com | WO#: | | | | or No | 0 | 1 | | | | | | | | I - Ice J - DI Water | U - Acetone V - MCAA |
| Project Name: Olin Wilmington MA Groundwater Quarterly | Project #: 48006612 | | | | (Yes | s or No) | oride | | ANC | | | | | container | K - EDTA L - EDA | W - pH 4-5 Z - other (specify) |
| Site: Massachusetts | SSOW#: | | | | Sample | ISD (Yes | Sulfate/Chloride | e e | d filtered | c Cond. | | | | of cont | Other: | |
| Sample Identification | Sample Date | Sample Time | Sample Type (C=comp, G=grab) | Matrix (W=water, S=solid O=waste/oil, | ield Filtered | | 300.0_28D - Su | 350.1 - Ammonia | 6010MCP - Field filtered AUCr | 2510B - Specific | | | | Total Number | Special In | aturations/Nata |
| Sample identification | Sample Date | Time - | | ation Code: | X | X | 1000 | - | 400,000 | N | | | A SECTION 1 | × | Special in | structions/Note: |
| OC-GW-202S | 8-6-18 | 9:20 | G | Water | 1 | | 1 | 1 | 1 | 1 | | | | 4 | | |
| OC-GW-202D | 8-6-18 | 9155 |) | Water | 1 | | 1 | 1 | 1 | 1 | | | | 4 | | |
| OC-GW-25 | 8-7-18 | 9:10 | | Water | u | | | 1 | 1 | 1 | | | | 4 | | |
| OC-GW-78S | 8-6-18 | 10:45 | - | Water | U | | , | 1 | 1 | 1 | | | | 4 | | |
| OC-GW-79S | 8-7-18 | 11:10 | | Water | U | | | 1 | 1 | 1 | | | | 4 | | |
| OC-PZ-16RRR | 8-7-18 | 10130 | | Water | 0 | | | 1 | | 1 | | | | 4 | | |
| OC-PZ-17RRR | 8-7-18 | 9145 | | Water | - | 1 | 1 | 1 | 1 | 1 | | | | 4 | | |
| OC-201-18R | 8-7-18 | 8:10 | | Water | 4 | 1 | | 1 | (| 1 | | | | 4 | | |
| OC-PZ-24 | 8-6-18 | 8:15 | W/ | Water | V | | 1 | 1 | 1 | 1 | | | | 4 | 1 | |
| OC-PZ-25 | 8-618 | 8:45 | - | Water | 4 | | 1 | 1 | 1 | 1 | | | | 4 | | |
| DUP | | | | Water | 1 | | | | | | | | | | | |
| Possible Hazard Identification Non-Hazard Flammable Skin Irritar | nt Poison B Unkn | own 🗆 | Radiologica | , | | Sam | ple I | Disp | osa | I (A 1 Client | fee may be ass | | d if samples are | | ned longer than | 1 month) Months |
| Deliverable Requested: I, II, III, IV, Other (specify) | | | | | | Spec | cial Ir | nstru | ictio | ns/Q0 | Requirements | | -, | , 11011 | 3 / 0/ | |
| Empty Kit Relinquished by: |) | Date: | | | Tir | ne: | | gi region | | | | Me | thod of Shipment: | | | |
| Relinquished by: | Date/Time: | -)/ | <u>_</u> | Company 150) | - | F | Receiv | ved-by | y: | 1 | 1 - | | Date/Time: | -10 | 1305 | Company |
| Relinquished by: | Date/Time: | 15 | 180 | Company | _ | 4 | Recei | od by | y:// | 11 | 2 | | Date/Time: | -18 | 0100 | Company |
| Relinquished by: | Date/Time: | 0 | 100 | Company | - | F | wei ver | ved by | y: | //_ | | - | Date/Time: | - | 0700 | Company |

8/24/2018

Custody Seals Intact:

Δ Yes Δ No

Custody Seal No .:





Cooler Temperature(s) °C and Other Remarks:









10 Hazelwood Drive Amherst, NY 14228-2298

360325-Boston

Chain of Custody Record

360325-Boston

360325-Boston



| Phone (716) 691-2600 Fax (716) 691-7991 | All and the second | | | | | | | | | | | | | | | | | THE LEADER IN EN | VIRONMENT | AL TESTING |
|-----------------------------------------------------------|---------------------------------|----------------|--------------|--------------|--------------|----------------|---------------|--------------|-----------------|---------------|-------|------------|-----------|----------------------------|--------------|-----|--------------|-------------------------------------------|----------------------------------------|------------|
| Client Information | Sampler: | Cour | LLAR | Lab F Mas | | Becky | C | | | | | | Carrier ' | | | | | COC No: 480-116095-2298 | 82.1 | |
| Client Contact: Mr. Brian Guichard | Sampler: BR W Phone: 97 9 | 7658 | 6121 | E-Ma beck | | ason(| @tes | tame | ericair | nc.co | m | | | E | | | | Page: Page 1 of 1 | | |
| Company: Olin Corporation | | | | | | | | | A | Anal | lysi | s Req | uest | 7 | | | J | Job #: | | |
| Address: 51 Eames street | Due Date Request | ed: | | | | | T | | | | | | | 480.4 | 140124 C | 00 | 299 | Preservation Code | | |
| City: Wilmington | TAT Requested (d | ays): | | | | | | | | | | | | | | | | A - HCL B - NaOH C - Zn Acetate | M - Hexane N - None O - AsNaO2 | 2 |
| State, Zip: MA, 01887 | | | | | | | | | | N N | | | | | | | | D - Nitric Acid E - NaHSO4 F - MeOH | P - Na2O4S Q - Na2SO3 R - Na2S2C | 3 |
| Phone: 423-336-4012(Tel) | PO #: REWI0025 | | | | No) | | | | | and BEHP only | | | | | | | | G - Amchlor H - Ascorbic Acid | S - H2SO4 T - TSP Doo | |
| Email: beguichard@olin.com | WO #: | | | | ŏ | (oN | | | | and B | | | | | | | 12.00 | J - Ice J - DI Water | U - Acetone V - MCAA | |
| Project Name: Olin Wilmington MA Plant B Quarterly May | Project #: 48006612 | | | | Sample (Yes | Lan. | Jonia | | vinos | NDPA | | | | | | | | K - EDTA L - EDA | W - pH 4-5 Z - other (sp | |
| Site: Massachusetts | SSOW#: | | | | Samp | | ı, Ammonia | 3 | VPH S60 TMPs | 8270 | 240 | | | | | 1 | 4 | Other: | | |
| Sample Identification | Sample Date | Sample Time | Type (w | | eld Filtered | X Perform MS/M | 350.1 - Nitro | 6010MCP - Fe | MAVPH - MA | STATE VINCE | 1000 | 3040C - Du | | | | | Total Number | Special In | structions | :/Note: |
| OC-GW-16R | 2-8-18 | 8:45 | | Water | 1 | - | 1 | | | 3 8 | _ | | | | | | | | | |
| Trip Blank | 0-6-10 | 0 73 | | Water | Ħ | \top | 1 | + | 1 | 0 | + | - | | + | | | 4 | | | |
| | | | | | Ħ | T | + | + | + | + | + | 1 | | | | H | 7 | | | |
| | 1 | | | | Ħ | | + | + | | + | + | | | | | | | | | |
| | | | | | Ħ | | | | 1 | | | | | | | | | | | |
| | | | | | П | | | | | | | | | | | | | | | |
| | | | | | H | + | + | + | + | + | + | + | | + | | Н | | | | |
| | - | | | | Н | | | | + | | + | + | | + | + | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | ison B Unkr | nown 🗀 | Radiological | | | | Re | turn | To Cli | ient | | | Dispos | sed if s al By L | | | | ed longer than 1 ive For | 1 month) Months | S |
| Deliverable Requested: I, II, III, IV, Other (specify) | | | | | | Spec | cial Ir | nstrud | ctions | s/QC | Red | uireme | nts: | | | | | | | |
| Empty Kit Relinquished by: Relinquished by: | | Date: | | | Tir | | | | | | | | I | Method o | of Shipment: | | | | | |
| | Date/Time: | | | ompany | | | _ | /ed by | >_ | 6 | ~ | _ | | | Date/Time | 5-1 | 8 | 1300 | Company | |
| Relinquisted by | Date/Time: | -18 | 1 has | ompany | | 4 | Recen | yed by | 11 | 1 | | | | | Date/Time | 9-1 | 8 | QUU | Company | } |
| Relinquished by: | Date/Time: | | G | ompany | | 1 | edeiv | ved by | r. • 1 | | | | | | Date/Time | | | | Company | |
| Custody Seals Intact: Custody Seal No.: Δ Yes Δ No | | 1 | | | | / | Cooler | r Temp | peratur | re(s) ° | C and | d Other F | Remarks | 1 | | | | 2.0 | | #/ |
| | | | | | | | | | | | | | | | | | | | Ver: 08/0 | 4/2016 |

8/23/20



V

N (3)

Appendix B

Data Validation Memoranda (*Provided on CD*)

Appendix B1

Second Quarter 2018 Sampling Event Third Quarter 2018 Sampling Event

Appendix B2

Additional Sampling Events

May 2018 Calcium Sulfate Landfill Sampling

June 2018 Private Well Sampling

September 2018 Private Well Sampling

Appendix B3

Unvalidated Data
April 2018 – September 2018
Plant B RGP and Tank Sampling

Appendix C

Weir Monthly Inspection Reports: April 2018 – September 2018



Wood Environment & Infrastructure Solutions, Inc. 271 Mill Road, 3rd Floor Chelmsford, MA 01824 USA

T: 978-692-9090

www.woodplc.com

Wilmington Conservation Commission Town Hall 121 Glen Road

Wilmington, MA 01887 Attn: Winifred McGowan

April 26, 2018

RE: Olin Corporation – DEP File #344-419 Weir Inspection Report – April 2018 Wood Project No. 6107-18-0016.04

Dear Commission:

This letter documents the weekly weir inspections carried out at the Olin Property in Wilmington, Massachusetts by Wood Environment & Infrastructure Solutions, Inc. (Wood) and Olin Corporation. The weekly weir inspection reports for the month of April 2018 are attached. Wood conducted an inspection on Thursday, April 26, 2018.

West Ditch Off-Property

Stations A and B had a normal level of clear water during the first three inspections of the month. During the fourth inspection, Stations A and B had a high level and flow of clear to tannic water with submerged leaves and a brown-rust color stream bottom.

Weir

Station D had a normal level of clear water during the first three inspections of the month. During the fourth and final inspection of the month, Station D had a high level and flow of clear to slightly tannic water with submerged leaves and a brown color stream bottom.

There was moderate flow from the Weir outlet and no flow to low flow from the Plant B outlet during the first three inspections. At the time of the fourth inspection, there was a high level and flow of clear water from Plant B and Weir outlets. The main area was clear with signs of algae growth noted along the stream bed for the first three inspections. There was a high level and flow of clear water, trace foaming, submerged leaves, and an orange-rust color stream bottom observed during the fourth and final inspection of the month.

South Ditch Downstream of the Weir

Stations E and F had a moderate flow of clear water during the first three inspections of the month. For the fourth and final inspection of the month, Stations E and F in the South Ditch had a high level and flow of clear water with some foaming and an orange-rust to brown color stream bottom. Station G had a moderate flow of clear water during the first three inspections of the month. During the fourth inspection, Station G was flooded with a high level and flow of clear water with submerged leaves, and a brown-rust color was observed on the stream bottom.



Page 2

The hay bale line had a moderate flow of clear water observed during the first three inspections of the month. A high level and flow of clear water with some foaming and a brown stream bottom were observed during the fourth and final inspection of the month.

Wetland Areas South of the South Ditch

Stations H and I had standing water during the first three inspections of the month. During the final inspection of the month, Stations H and I were flooded with a medium to high level and flow of clear water with slight foaming noted at Station I.

Sincerely,

Wood Environment & Infrastructure Solutions, Inc.

Chris Mazzolini

Senior Project Scientist

Michael J. Murphy Project Principal

An of Murphy

Attachments

cc: Mr. James Cashwell, Olin Corp. (Electronic)

Mr. Chinny Esakkiperumal, Olin Corp.

Mr. Brian Guichard, Olin Corp.

Mr. Jim DiLorenzo, EPA

Chris Planolin

Mr. Garry Waldeck, MassDEP - Boston

Wood Project File

| Date | 4/6/2018 | Time | 10:15 | Inspectors | Leroy Johnson |
|------|----------|------|-------|------------|---------------|
| | | | | | |

| | 13 | pitate | | | | | | |
|---------------------------------------------------|------------|---------|-----------------------------------------------------|--|--|--|--|--|
| Station | | vation | Other Observations | | | | | |
| | Yes No | | | | | | | |
| Offsite Fenced Ditch System | | | Stn A has a normal level of clear water. | | | | | |
| Station A | | х | Stn B has a normal level of clear water. | | | | | |
| Station B | | Х | | | | | | |
| West Ditch Foot Bridge | | | | | | | | |
| Station C | | Х | Filled in | | | | | |
| Weir - Upstream | | | Stn D has a normal level of clear water. | | | | | |
| Station D | х | | | | | | | |
| Weir - Downstream | | | Stations E & F have a moderate flow of clear water. | | | | | |
| Station E | х | | | | | | | |
| Station F | х | | | | | | | |
| Station G | х | | Stn G has a moderate flow of clear water. | | | | | |
| Unnamed Ditch | | | Stn H has standing water. | | | | | |
| Station H | | х | Stn I has standing water. | | | | | |
| Station I | | х | | | | | | |
| Supplemental Inspection | | | | | | | | |
| Locations (designate | | | | | | | | |
| station location on page 2 of | | | | | | | | |
| Staff Gauge Level | | | | | | | | |
| Condition of Weir / Hay bale Barriers: | | | There is a moderate flow from the weir and no flow | | | | | |
| from the outlet pipe. The main area is o | clear. The | walking | path is mud and covered with numerous fallen trees. | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| The Hay Bale line had a medium flow o | of clear w | ater. | | | | | | |
| | | | | | | | | |
| Re-attach the pipe riser inside the reter | ntion pon | d. | | | | | | |
| Te-attach the pipe haci maide the retention pond. | | | | | | | | |

| Date | 4/13/2018 | Time | 11:00 | Inspectors | Leroy | Johnson |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------|------------|-------|---------|
| | Water the same of | | | • | | |
| | | | | | | |

| Precipitate | | pitate | | | | |
|-----------------------------------------------------------------------------------------------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|--|--|--|
| Station | Obser | vation | Other Observations | | | |
| | Yes No | | | | | |
| Offsite Fenced Ditch System | | | Stn A has a normal level of clear water. | | | |
| Station A | | х | Stn B has a normal level of clear water. | | | |
| Station B | | х | | | | |
| West Ditch Foot Bridge | | , | | | | |
| Station C | | х | Filled in | | | |
| Weir - Upstream | | | Stn D has a normal level of clear water. | | | |
| Station D | х | | | | | |
| Weir - Downstream | | | Stations E & F have a moderate flow of clear water. | | | |
| Station E | Х | | | | | |
| Station F | х | | | | | |
| Station G | X | | Stn G has a moderate flow of clear water. | | | |
| Unnamed Ditch | | | Stn H has standing water. | | | |
| Station H | | х | Stn I has standing water. | | | |
| Station I | | х | | | | |
| Supplemental Inspection | | | | | | |
| Locations (designate | | | | | | |
| station location on page 2 of | | | | | | |
| Staff Gauge Level | | | | | | |
| Condition of Weir / Hay bale Barriers: | | | There is a moderate flow from the weir and a low flow | | | |
| from the outlet pipe. The main area is | clear with | signs of | algae growth in the main area and along the stream | | | |
| bed. | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| The Hay Bale line had a moderate flow of clear water. | | | | | | |
| The riay bale line had a moderate now | or olear | water. | | | | |
| | | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | | | | |
| Manhairphanachan ann ann an Airm ann ann an Airm ann ann ann ann an Airm ann ann an Airm ann an Airm ann ann an | | and a second sec | | | | |

| Date | 4/20/2018 | Time | 10:30 | Inspectors | Leroy Johnson |
|------|-----------|------|-------|------------|---------------|
| | | | | | |

| Station | Precipitate Observation Yes No | | Other Observations | | |
|-------------------------------------------------------------------|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|--|--|
| Offsite Fenced Ditch System | 163 | 140 | Stn A has a normal level of clear water. | | |
| Station A | | х | Stn B has a normal level of clear water. | | |
| Station B | | х | | | |
| West Ditch Foot Bridge | | | | | |
| Station C | | х | Filled in | | |
| Weir - Upstream | | | Stn D has a normal level of clear water. | | |
| Station D | х | | | | |
| Weir - Downstream | | | Stations E & F have a moderate flow of clear water. | | |
| Station E | х | | | | |
| Station F | Х | | | | |
| Station G | х | | Stn G has a moderate flow of clear water. | | |
| Unnamed Ditch | | | Stn H has standing water. | | |
| Station H | | х | Stn I has standing water. | | |
| Station I | | х | | | |
| Supplemental Inspection | | | | | |
| Locations (designate station location on page 2 of | | | | | |
| Staff Gauge Level | | l | | | |
| Condition of Weir / Hay bale Barriers: | | | There is a moderate flow from the weir and a moderate | | |
| | a is clear | | ns of algae growth in the main area and along the | | |
| | | and the same the same state of | | | |
| stream bed but seems to be slightly less abundant than last week. | | | | | |
| | | | | | |
| | ··· | | | | |
| The Hay Rale line has a moderate flavor | of alass | water | | | |
| The Hay Bale line has a moderate flow | oi clear | watel. | | | |
| Pagen the removal of some of the falls | n tross = | nd brand | has along the welling trail | | |
| Began the removal of some of the falle | ii trees a | na pranci | nes along the walking trail. | | |

Wilmington Site Interim Action Plan

South and West Ditch Precipitate Inspection Report

| Date: | 4/26/2018 | Time: | 9:45 | Inspectors: Chris Mazzolini |
|-------|-----------------|-------|------|-----------------------------|
| | ~60°F; Overcast | _ | | |

| Station | Preci Obsei | pitate rvation | Other Observations | | | |
|-----------------------------------------|-----------------|-------------------|-----------------------------------------------------------------------------------|--|--|--|
| Yes No | | No | | | | |
| Off-site Fenced Ditch System | | | | | | |
| Station A | | х | A: High level and flow of clear to tannic water; w/ leaves and a brown-rust botto | | | |
| Station B | | х | B: High level and flow of clear to tannic water; leaves observed on the stream | | | |
| | | | bottom | | | |
| West Ditch Foot Bridge | | | | | | |
| Station C | | | C: Filled in | | | |
| Weir - Upstream | | | | | | |
| Station D | | Х | D: High level and flow of clear to tannic water w/ leaves and a | | | |
| | | | brown stream bottom | | | |
| Weir - Downstream | | | | | | |
| Station E | | х | E: High level and flow of clear water w/ an orange-rust bottom and foaming | | | |
| Station F | | х | F: High level and flow of clear water w/ a brown-rust bottom and foaming | | | |
| Station G | | х | G: Flooded w/ saturated soil. High level and flow of clear water w/ a | | | |
| | | | brown-rust stream bottom and leaves observed | | | |
| Unnamed Ditch | | | | | | |
| Station H | | х | H: Flooded, high level and flow of clear water w/ slight foaming noted | | | |
| Station I | | х | I: Flooded, medium to high level and flow of clear water | | | |
| Supplemental Inspection | | | | | | |
| Locations (designate station | | | | | | |
| location on page 2 of 2) | | | | | | |
| Staff Gauge Level | | | | | | |
| Condition of Weir / Hay Bale Barriers | s: | | | | | |
| There was a high level and flow of clea | r water from th | ne Plant B C | Dutlet and Weir Outlet pipe. | | | |
| The Main Area: High level and flow of o | clear water w/ | trace foami | ng; leaves and an orange-rust color were observed on the bottom. | | | |
| The Hay Bale Line: High level and flow | of clear water | w/ a brown | bottom and some foaming. | | | |
| Animal tracks observed on the trails. | | | - | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |



Wood Environment & Infrastructure Solutions, Inc. 271 Mill Road, 3rd Floor Chelmsford, MA 01824 **USA**

T: 978-692-9090

May 24, 2018 www.woodplc.com

Wilmington Conservation Commission Town Hall 121 Glen Road Wilmington, MA 01887 Attn: Winifred McGowan

RE: Olin Corporation - DEP File #344-419 Weir Inspection Report - May 2018 Wood Project No. 6107-18-0016.04

Dear Commission:

This letter documents the weekly weir inspections carried out at the Olin Property in Wilmington, Massachusetts by Wood Environment & Infrastructure Solutions, Inc. (Wood) and Olin Corporation. The weekly weir inspection reports for the month of May 2018 are attached. Wood conducted an inspection on Thursday, May 24, 2018.

West Ditch Off-Property

Stations A and B had low to high levels of clear water during the first three inspections of the month. During the fourth and final inspection, Stations A and B had a medium to high level and medium to low flow of clear to tannic water with submerged leaves observed on the stream bottom.

Weir

Station D had a normal to elevated level of clear water during the first three inspections of the month. During the fourth inspection, Station D had a high level and medium flow of clear to slightly tannic water; with floating leaves and a brown-rust color noted on the stream bottom.

There was a low to high flow from the Weir outlet and low to moderate flow from the Plant B outlet during the first three inspections. During the fourth inspection there was a moderate level and flow of clear water from the Weir outlet and Plant B outlet. The main area was clear with signs of algae growth noted along the stream bed for the first three inspections. There was a high level and flow of clear water, floating green algae, submerged leaves, and an orange-rust color stream bottom observed during the fourth and final inspection of the month.

South Ditch Downstream of the Weir

Stations E and F had a moderate to high flow of clear water during the first three inspections of the month. For the fourth and final inspection of the month, Stations E and F had a high level and flow of clear water with an orange-rust color stream bottom. Station G had a moderate to high flow of clear water during the first three inspections of the month. For the fourth inspection, Station G was flooded with a high level and flow of clear water and had an orange-rust color stream bottom.







Page 2

The hay bale line had a moderate to high flow of clear water observed during the first three inspections of the month. For the fourth and final inspection of the month, a high level and flow of clear water, some foaming, and a rust color stream bottom was observed.

Wetland Areas South of the South Ditch

Stations H and I had standing water during the first three inspections of the month. For the fourth and final inspection, Stations H and I were flooded with clear water, had some green algae, and low to no flow (respectively).

Sincerely,

Wood Environment & Infrastructure Solutions, Inc.

Chris Mazzolini

Senior Project Scientist

This Plantin

Michael J. Murphy

Project Principal

An of Murphy

Attachments

Mr. James Cashwell, Olin Corp. (Electronic) cc:

Mr. Chinny Esakkiperumal, Olin Corp.

Mr. Brian Guichard, Olin Corp.

Mr. Jim DiLorenzo, EPA

Mr. Garry Waldeck, MassDEP - Boston

Wood Project File

 $[P:\old_Wakefield_Data\projects\OLIN\Wilmington\South\ Ditch\Monthly\ Inspections\2018\2018-05\May\ 2018.docx]$

| Date | 5/4/2018 | Time | 10:15 | Inspectors | Leroy Johnson |
|------|----------|------|-------|------------|---------------|
| | | | | | |

| Station | 1 | pitate vation | Other Observations | | |
|----------------------------------------------------|-------------|------------------|-----------------------------------------------------|--|--|
| | Yes | No | | | |
| Offsite Fenced Ditch System | | | Stn A has a normal level of clear water. | | |
| Station A | | х | Stn B has a normal level of clear water. | | |
| Station B | | х | | | |
| West Ditch Foot Bridge | | | | | |
| Station C | | х | Filled in | | |
| Weir - Upstream | | | Stn D has a normal level of clear water. | | |
| Station D | х | | | | |
| Weir - Downstream | | | Stations E & F have a moderate flow of clear water. | | |
| Station E | х | | | | |
| Station F | х | | | | |
| Station G | х | | Stn G has a moderate flow of clear water. | | |
| Unnamed Ditch | | | Stn H has standing water. | | |
| Station H | | х | Stn I has standing water. | | |
| Station I | | х | | | |
| Supplemental Inspection | | | | | |
| Locations (designate station location on page 2 of | | | | | |
| Staff Gauge Level | | | | | |
| Condition of Weir / Hay bale Barriers: | | | There is a moderate flow from the weir and a low | | |
| | a is clear | - | | | |
| | a is cital | with Sight | s of algae growth in the main area and along the | | |
| stream bed. | | | | | |
| | | | | | |
| | | | | | |
| The Head Dele Read have a section of Co. | -6 -1 | | | | |
| The Hay Bale line has a moderate flow | of clear | water. | | | |
| Noticed several locations of canine sca | nt along th | ne walking | ı trail. | | |
| Picked up 5 ticks on the walk. | | | | | |

| Date | 5/11/2018 | Time | 10:15 | Inspectors | Leroy Johnson |
|------|-----------|------|-------|------------|---------------|
| | | | | | |

| Pr | | pitate | | | | |
|-------------------------------------------|-------------------------------------------------------|-----------|-----------------------------------------------------|--|--|--|
| Station | Obser | vation | Other Observations | | | |
| | Yes | No | | | | |
| Offsite Fenced Ditch System | | | Stn A has a low level of clear water. | | | |
| Station A | | х | Stn B has a normal level of clear water. | | | |
| Station B | | х | | | | |
| West Ditch Foot Bridge | | | | | | |
| Station C | | х | Filled in | | | |
| Weir - Upstream | | | Stn D has a normal level of clear water. | | | |
| Station D | х | | | | | |
| Weir - Downstream | | | Stations E & F have a moderate flow of clear water. | | | |
| Station E | х | | | | | |
| Station F | х | | | | | |
| Station G | х | | Stn G has a moderate flow of clear water. | | | |
| Unnamed Ditch | | | Stn H has standing water. | | | |
| Station H | | х | Stn I has standing water. | | | |
| Station I | | х | | | | |
| Supplemental Inspection | | | | | | |
| Locations (designate | | | | | | |
| station location on page 2 of | | | | | | |
| Staff Gauge Level | | | | | | |
| Condition of Weir / Hay bale Barriers: | | | There is a low flow from the weir and a moderate | | | |
| flow from the outlet pipe. The main are | a is clear | with sign | s of algae growth in the main area and along the | | | |
| stream bed. Foliage is in near full bloor | m. | | | | | |
| | | | | | | |
| | | | | | | |
| | ilgestry (fil Miller Hart Wild Historium og i dely co | | | | | |
| The Hay Bale line has a moderate flow | of clear | water. | | | | |
| | | | | | | |
| Noticed 2 deer by the foot bridge. | | | | | | |
| Picked up 4 ticks on the walk. | | | | | | |

| Date | 5/18/2018 | Time | 9:00 | Inspectors | Brian Guichard |
|------|-----------|------|------|------------|----------------|
| | | | | | |

| Station | Precipitate Observation | | Other Observations | |
|----------------------------------------------------------------------------------|----------------------------|--------------------------|---------------------------------------------------|--|
| Offsite Fenced Ditch System | Yes | No | Stn A has a high level of clear water. | |
| Station A | | х | Stn B has a high level of clear water. | |
| Station B | | X | out binas a high level of clear water. | |
| West Ditch Foot Bridge | | | | |
| Station C | | х | Filled in | |
| Weir - Upstream | | | Stn D has a elevated level of clear water. | |
| Station D | х | | | |
| Weir - Downstream | <u> </u> | | Stations E & F have a high flow of clear water. | |
| Station E | х | | | |
| Station F | х | | | |
| Station G | х | | Stn G has a high flow of clear water. | |
| Unnamed Ditch | | | Stn H has standing water. | |
| Station H | | х | Stn I has standing water. | |
| Station I | | х | | |
| Supplemental Inspection | | | | |
| Locations (designate station location on page 2 of | | | | |
| Staff Gauge Level | | | | |
| Condition of Weir / Hay bale Barriers: | | | There is a high flow from the weir and a moderate | |
| | a is clear | - | s of algae growth in the main area and along the | |
| | | | | |
| stream bed. The stream has a high flow of clear water. Foliage is in full bloom. | | | | |
| ······································ | | | | |
| | | or one or a constant and | | |
| The Hay Bale line has a high flow of cle | ear water | | | |
| | | | | |
| *************************************** | | | | |
| Picked up 5 ticks on the walk. | | | | |

Interim Action Plan

South and West Ditch Precipitate Inspection Report

| Date: | 5/24/2018 | Time: | 13:30 | Inspectors: Shawna lacozzi |
|-------|--------------|-------|-------|----------------------------|
| - | ~80°F; Sunny | | | |

| _ | Precipitate Observation | | |
|-------------------------------------------|-------------------------|-------------|-----------------------------------------------------------------------------|
| Station | | | Other Observations |
| | Yes | No | |
| Off-site Fenced Ditch System | 1 | T | |
| Station A | | Х | A: Med. level and low flow of clear to tannic water w/ leaves on the bottom |
| Station B | | Х | B: High level and med. to low flow of clear to tannic water |
| | | | with leaves observed on the bottom |
| West Ditch Foot Bridge | | | |
| Station C | | | C: Filled in |
| Weir - Upstream | | | |
| Station D | | х | D: High level and med. flow of clear to tannic water w/ leaves and a |
| | | | brown-rust bottom |
| Weir - Downstream | | | |
| Station E | | х | E: High level and flow of clear water w/ an orange-rust bottom |
| Station F | | х | F: High level and flow of clear water w/ an orange-rust bottom |
| Station G | | х | G: Flooded w/ saturated soil. High level and medium flow of clear water w/ |
| | | | an orange-rust stream bottom |
| Unnamed Ditch | | | |
| Station H | | х | H: Flooded, low level and flow of clear water w/ green algae noted |
| Station I | | х | I: Flooded, medium level of clear water, no flow; green algae noted |
| Supplemental Inspection | | | |
| Locations (designate station | | | |
| location on page 2 of 2) | | | |
| Staff Gauge Level | | • | |
| Condition of Weir / Hay Bale Barriers: | | | |
| There was a med. level and flow of clear | water from t | the Plant B | Outlet and Weir Outlet pipe. |
| | | | en algae, leaves and an orange-rust color were observed on the bottom. |
| The Hay Bale Line: High level and flow of | | | |
| Animal tracks observed on the trails. | III III | | |
| Frogs and tadpoles observed. | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |



Wood Environment & Infrastructure Solutions, Inc. 271 Mill Road, 3rd Floor Chelmsford, MA 01824 USA

T: 978-692-9090

www.woodplc.com

June 29, 2018

Wilmington Conservation Commission Town Hall 121 Glen Road Wilmington, MA 01887 Attn: Winifred McGowan

RE: Olin Corporation – DEP File #344-419 Weir Inspection Report – June 2018 Wood Project No. 6107-18-0016.04

Dear Commission:

This letter documents the weekly weir inspections carried out at the Olin Property in Wilmington, Massachusetts by Wood Environment & Infrastructure Solutions, Inc. (Wood) and Olin Corporation. The weekly weir inspection reports for the month of June 2018 are attached. Wood conducted an inspection on Friday, June 29, 2018.

West Ditch Off-Property

Stations A and B had a normal level of clear water during the first two inspections of the month and a low level of clear water during the last two inspections of the month. During the fifth inspection, Stations A and B had a medium level and low flow of tannic water with submerged leaves and a brown-rust color stream bottom.

Weir

Station D had a normal level of clear water during the first two inspections of the month a low level of clear water during the last two inspections of the month. During the fifth and final inspection of the month, Station D had a medium level and flow of clear to slightly tannic water with submerged leaves and a brown color stream bottom.

There was moderate flow from the Weir outlet and low flow from the Plant B outlet during the first inspections. During the second, third and fourth inspections there was low to no flow from the Weir and the Plant B outlet pipe. At the time of the fifth inspection, there was a medium level and flow of clear water from the Weir outlet and no flow from from the Plant B outlet. The main area was clear with signs of algae growth noted along the stream bed for the first three inspections. There was a medium level and flow of clear water, with some green algae, trace foaming, submerged leaves, and an orange-rust color stream bottom observed during the fourth and final inspection of the month.

South Ditch Downstream of the Weir

Stations E and F had a moderate flow of clear water during the first and fifth inspections of the month. For the second, third and fourth inspection of the month, Stations E and F in the South Ditch had a low level and flow of clear water. During the fifth and final inspection some foaming and an orange-rust to brown color stream bottom was noted. Station G had a moderate flow of





Page 2

clear water during the first inspection of the month. During the remaining four inspections, Station G had a low level and flow of clear water with submerged leaves, and a brown-rust color was observed on the stream bottom during the fifth and final inspection.

The hay bale line had a moderate flow of clear water observed during the first inspection of the month. A very low flow of clear water was observed during the second, third and fourth inspections. A medium level and flow of clear water with some foaming and a brown stream bottom were observed during the fifth and final inspection of the month.

Wetland Areas South of the South Ditch

Stations H and I had standing water during the first inspection of the month. During the second, third and fourth inspections, both stations had saturated soil. During the fifth and final inspection of the month, Station H had a medium level and flow of clear water with trace foam, and station I was flooded with clear standing water, with some green algae noted.

Sincerely,

Wood Environment & Infrastructure Solutions, Inc.

Chris Mazzolini

Senior Project Scientist

This Parolin

Michael J. Murphy

Project Principal

An of Murphy

Attachments

cc: Mr. James Cashwell, Olin Corp. (Electronic)

Mr. Chinny Esakkiperumal, Olin Corp.

Mr. Brian Guichard, Olin Corp.

Mr. Jim DiLorenzo, EPA

Mr. Garry Waldeck, MassDEP - Boston

Wood Project File

[P:\old_Wakefield_Data\projects\OLIN\Wilmington\South Ditch\Monthly Inspections\2018\2018-06\June 2018.docx]

| Date | 6/1/2018 | Time | 11:00 | Inspectors | Leroy Johnson |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------|------------|---------------|
| | The second secon | | | | |

| | | pitate | | | | |
|-------------------------------------------------------|-------------|-----------|-----------------------------------------------------|--|--|--|
| Station | Observation | | Other Observations | | | |
| | Yes | No | | | | |
| Offsite Fenced Ditch System | | | Stn A has a normal level of clear water. | | | |
| Station A | | Х | Stn B has a normal level of clear water. | | | |
| Station B | | Х | | | | |
| West Ditch Foot Bridge | | | | | | |
| Station C | | Х | Filled in | | | |
| Weir - Upstream | | | Stn D has a normal level of clear water. | | | |
| Station D | х | | | | | |
| Weir - Downstream | | | Stations E & F have a moderate flow of clear water. | | | |
| Station E | х | | | | | |
| Station F | х | | | | | |
| Station G | х | | Stn G has a moderate flow of clear water. | | | |
| Unnamed Ditch | | | Stn H has standing water. | | | |
| Station H | | х | Stn I has standing water. | | | |
| Station I | | х | | | | |
| Supplemental Inspection | | | | | | |
| Locations (designate | | | | | | |
| station location on page 2 of | | | | | | |
| Staff Gauge Level | | | | | | |
| Condition of Weir / Hay bale Barriers: | | | There is a moderate flow from the weir and a low | | | |
| flow from the outlet pipe. The main are | a is clear | with sign | s of algae growth in the main area and along the | | | |
| stream bed. The stream has a modera | te flow of | clear wa | ter. | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| The Hay Bale line has a moderate flow of clear water. | | | | | | |
| | *** | | | | | |
| | | | | | | |
| | | | | | | |

| Date | 6/8/2018 | Time | 10:45 | Inspectors | Leroy Johnson |
|------|----------|------|-------|------------|---------------|
| | | | | • | |

| Station | Obser | pitate vation | Other Observations | | |
|-------------------------------------------------------------------------------------------|------------|------------------|---------------------------------------------------|--|--|
| | Yes | No | | | |
| Offsite Fenced Ditch System | 1 | | Stn A has a normal level of clear water. | | |
| Station A | | х | Stn B has a normal level of clear water. | | |
| Station B | | Х | | | |
| West Ditch Foot Bridge | | | | | |
| Station C | | х | Filled in | | |
| Weir - Upstream | | | Stn D has a normal level of clear water. | | |
| Station D | х | | | | |
| Weir - Downstream | | | Stations E & F have a low flow of clear water. | | |
| Station E | х | | | | |
| Station F | х | | | | |
| Station G | х | | Stn G has a low flow of clear water. | | |
| Unnamed Ditch | | | Stn H has saturated soil. | | |
| Station H | | х | Stn I has saturated soil. | | |
| Station I | | х | | | |
| Supplemental Inspection | | | | | |
| Locations (designate | | | | | |
| station location on page 2 of | | | | | |
| Staff Gauge Level | | | | | |
| Condition of Weir / Hay bale Barriers: | | 3 | There is no flow from the weir and a low | | |
| flow from the outlet pipe. The main are | a is clear | . The stre | eam has a low flow of clear water with some light | | |
| foaming at the check dams. | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| The Hay Bale line has a trickle flow of clear water. | | | | | |
| | | | | | |
| picked up 3 ticks during the walk and t | here is ar | excessi | ve amount of mosquitos and flies. | | |
| provide ap a solid during the fram and diero to an excessive amount of mooquitos and mos. | | | | | |

| Date | 6/15/2018 | Time 3:00:00 A Inspectors | Leroy Johnson |
|------|-----------|---------------------------|---------------|
|------|-----------|---------------------------|---------------|

| Station | | pitate vation No | Other Observations | | |
|------------------------------------------------------|-------------------------------------------------------------------|------------------------|------------------------------------------------------|--|--|
| Offsite Fenced Ditch System | 165 | 140 | Stn A has a low level of clear water. | | |
| Station A | | х | Stn B has a low level of clear water. | | |
| Station B | | х | | | |
| West Ditch Foot Bridge | | | | | |
| Station C | | х | Filled in | | |
| Weir - Upstream | | | Stn D has a low level of clear water. | | |
| Station D | х | | | | |
| Weir - Downstream | | | Stations E & F have a low flow of clear water. | | |
| Station E | х | | | | |
| Station F | х | | | | |
| Station G | х | | Stn G has a low flow of clear water. | | |
| Unnamed Ditch | | | Stn H has saturated soil. | | |
| Station H | | х | Stn I has saturated soil. | | |
| Station I | | х | | | |
| Supplemental Inspection | | | | | |
| Locations (designate station location on page 2 of | | | | | |
| Staff Gauge Level | | | | | |
| Condition of Weir / Hay bale Barriers: | | | There is a low flow from the weir and no | | |
| • | a is clear | with som | ne light scum on the water surface. The stream has a | | |
| | *********** | | | | |
| 150 Now of oldar water with dome light | low flow of clear water with some ligh foaming at the check dams. | | | | |
| | | | | | |
| | | | | | |
| The Hay Bale line has a trickle flow of clear water. | | | | | |
| picked up 4 ticks during the walk and s | aw lots o | f canine a | and deer prints in the mud along the trail. | | |

| Date | 6/22/2018 | Time | 11:30 | Inspectors | Leroy Johnson | |
|------|-----------|------|-------|------------|---------------|--|
| | | | | | | |

| | Precipitate | | | | |
|------------------------------------------------------|-------------------------------------------|----------|-------------------------------------------------------|--|--|
| Station | Obser | vation | Other Observations | | |
| | Yes No | | | | |
| Offsite Fenced Ditch System | | | Stn A has a low level of clear water. | | |
| Station A | | х | Stn B has a low level of clear water. | | |
| Station B | | х | | | |
| West Ditch Foot Bridge | | | | | |
| Station C | | х | Filled in | | |
| Weir - Upstream | | | Stn D has a low level of clear water. Noticed several | | |
| Station D | х | | frogs and one snake in the area. | | |
| Weir - Downstream | | | Stations E & F have a low flow of clear water. | | |
| Station E | х | | | | |
| Station F | х | | | | |
| Station G | Х | | Stn G has a low flow of clear water. | | |
| Unnamed Ditch | | | Stn H has saturated soil. | | |
| Station H | | х | Stn I has saturated soil. | | |
| Station I | | х | | | |
| Supplemental Inspection | | | | | |
| Locations (designate | | | | | |
| station location on page 2 of | | | | | |
| Staff Gauge Level | | | | | |
| Condition of Weir / Hay bale Barriers: | | 59 | There is no flow from the weir and a trickle | | |
| flow from the outlet pipe. The main are | a is clear | with son | ne light scum on the water surface. The stream has a | | |
| trickle flow of clear water. | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| The Hay Bale line has a trickle flow of clear water. | | | | | |
| | The ries and a dione now of close factor. | | | | |
| Picked up 4 ticks. | | | | | |
| Flored up + tions. | | | | | |

Olin Corporation

Wilmington Site Interim Action Plan

South and West Ditch Precipitate Inspection Report

Time: 11:50 Inspectors: Chris Mazzolini

| | ~88°F; Sunny, hot, humid | | | |
|-------------|--------------------------|--------|---------|-----------------------------------------------------------------------------|
| | | | | |
| Precipitate | | pitate | | |
| | Station Observation | | rvation | Other Observations |
| | | Yes | No | |
| Off-site Fe | enced Ditch System | | | |
| | Station A | | Х | A: Med./low level and flow of clear to tannic water w/ leaves on the bottom |
| | Station B | | х | B: Med./low level and flow of clear to tannic water w/ leaves on the bottom |
| | | | | |
| West Ditcl | h Foot Bridge | | | |
| | | | | |

| Off-site Fenced Ditch System | | | |
|------------------------------------------|------------------|---------|-----------------------------------------------------------------------------|
| Station A | | Χ | A: Med./low level and flow of clear to tannic water w/ leaves on the bottom |
| Station B | | X | B: Med./low level and flow of clear to tannic water w/ leaves on the bottom |
| West Ditab Foot Bridge | | | |
| West Ditch Foot Bridge | 1 | | O. Filled in |
| Station C | <u> </u> | | C: Filled in |
| Weir - Upstream | | | |
| Station D | Х | | D: Med. level and flow of clear to tannic water w/ leaves on the bottom and |
| | | | a brown bottom |
| Weir - Downstream | | | |
| Station E | | Χ | E: Med. level and flow of clear water w/ brown-rust bottom and some foaming |
| Station F | | Χ | F: Med. level and flow of clear water w/ brown-rust bottom and some foaming |
| Station G | | Х | G: Overgrown, med./low level and flow of clear water w/ brown stream bottom |
| Unnamed Ditch | | | |
| Station H | | Х | H: Medium level and flow of clear water w/ trace foam |
| Station I | | X | I: Flooded, clear standing water, no flow, with some green algae |
| Supplemental Inspection | | | |
| Locations (designate station | | | |
| location on page 2 of 2) | | | |
| Staff Gauge Level | | | |
| Condition of Weir / Hay Bale Barriers: | | | |
| There was a medium level and flow of cle | ar water from t | he Weir | Outlet. No flow from the Plant B Outlet. |
| | | | n algae, foaming, and a brown-rust color was observed on the bottom. |
| The Hay Bale Line: Medium level and flov | | | |
| Some frogs and tadpoles observed. | r or oloar water | W & DIO | om bottom and trace rearring. |
| Some rogs and taupoles observed. | | | |
| | | | |
| | | | |
| | | | |

Date: 6/29/2018



Wood Environment & Infrastructure Solutions, Inc. 271 Mill Road, 3rd Floor Chelmsford, MA 01824 USA

T: 978-692-9090

www.woodplc.com

July 25, 2018

Wilmington Conservation Commission Town Hall 121 Glen Road Wilmington, MA 01887 Attn: Winifred McGowan

RE: Olin Corporation – DEP File #344-419 Weir Inspection Report – July 2018 Wood Project No. 6107-18-0016.04

Dear Commission:

This letter documents the weekly weir inspections carried out at the Olin Property in Wilmington, Massachusetts by Wood Environment & Infrastructure Solutions, Inc. (Wood) and Olin Corporation. The weekly weir inspection reports for the month of July 2018 are attached. Wood conducted an inspection on Wednesday, July 25, 2018.

West Ditch Off-Property

Stations A and B had a low level of clear water during the first three inspections of the month. During the fourth inspection, Stations A and B had a high level and flow of clear to tannic water with submerged leaves and a brown-rust color stream bottom.

Weir

Station D had a low level of clear to tannic water during the first three inspections of the month. During the fourth and final inspection of the month, Station D had a high level and low flow of clear to slightly tannic water with submerged leaves and a brown color stream bottom.

There was no flow from the Weir outlet or from the Plant B outlet during the first two inspections. At the time of the third inspection, there was a low level and flow of clear water from Plant B and Weir outlets. At the time of the fourth and final inspection, there was a low level and flow of clear water from the Weir outlet and no flow from the Plant B outlet. The main area had a low level and flow of clear water with signs of algae growth noted along the stream bed for the first three inspections. There was a moderate level and flow of clear water, with algae growth, and an orange-rust color stream bottom observed during the fourth and final inspection of the month.

South Ditch Downstream of the Weir

Stations E and F had a low flow of clear water during the first three inspections of the month. For the fourth and final inspection of the month, Station E in the South Ditch had a medium level and flow of clear water with an orange-rust to brown color stream bottom. At the time of the fourth inspection Station F had a low level and flow of clear water with an orange-rust brown color stream bottom. Station G had a low to very level and flow of clear water during all four inspections of the month. During the fourth inspection, a brown-rust color was observed on the stream bottom.



Page 2

The hay bale line had no flow during the first two inspections of the month. A low level and flow of clear water with and a brown stream bottom was observed during the third and fourth inspections of the month.

Wetland Areas South of the South Ditch

Stations H and I had saturated soil during the first, third and fourth inspections of the month. During the second inspection Station H was dry and Station I had soft soil.

Sincerely,

Wood Environment & Infrastructure Solutions, Inc.

Chris Mazzolini

Senior Project Scientist

This Plantin

Michael J. Murphy

Project Principal

An of Murphy

Attachments

cc: Mr. James Cashwell, Olin Corp. (Electronic)

Mr. Chinny Esakkiperumal, Olin Corp.

Mr. Brian Guichard, Olin Corp.

Mr. Jim DiLorenzo, EPA

Mr. Garry Waldeck, MassDEP - Boston

Wood Project File

 $\label{lem:control_projects} \begin{tabular}{ll} P:\old_Wakefield_Data\projects\OLIN\Wilmington\South\ Ditch\Monthly\ Inspections\2018\2018-07\July\ 2018.docx] \end{tabular}$

| Date | 7/6/2018 | Time | 10:00 | Inspectors | Leroy Johnson | |
|------|----------|------|-------|------------|----------------------|--|
| - | | | | • | | |

| | Precipitate | | | | | |
|-----------------------------------------|-------------|-----------|----------------------------------------------------|--|--|--|
| Station | Obser | vation | Other Observations | | | |
| | Yes | No | | | | |
| Offsite Fenced Ditch System | | | Stn A has a low level of clear water. | | | |
| Station A | | х | Stn B has a low level of clear water. | | | |
| Station B | | х | | | | |
| West Ditch Foot Bridge | | | | | | |
| Station C | | х | Filled in | | | |
| Weir - Upstream | | | Stn D has a low level of clear water. | | | |
| Station D | х | | | | | |
| Weir - Downstream | | | Stations E & F have a low flow of clear water. | | | |
| Station E | х | | | | | |
| Station F | х | | | | | |
| Station G | х | | Stn G has a low flow of clear water. | | | |
| Unnamed Ditch | | | Stn H has saturated soil. | | | |
| Station H | | х | Stn I has saturated soil. | | | |
| Station I | | x | | | | |
| Supplemental Inspection | | | | | | |
| Locations (designate | | | | | | |
| station location on page 2 of | | | | | | |
| Staff Gauge Level | | | | | | |
| Condition of Weir / Hay bale Barriers: | | | There is no flow from the weir and no | | | |
| flow from the outlet pipe. The main are | a is low v | with some | light scum on the water surface. The stream has no | | | |
| flow. | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| The Hay Bale line has no flow. | | | | | | |
| | | | | | | |
| Picked up 8 ticks. | | | | | | |
| | | | | | | |

| Date | 7/13/2018 | Time | 10:00 | Inspectors | Leroy Johnson | |
|------|-----------|------|-------|------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | | • | | the state of the s |

| Station | Precipitate Observation | | Other Observations | | |
|----------------------------------------------------|--------------------------------|--------------|----------------------------------------------------|--|--|
| Station | Yes | No | Outer Observations | | |
| Offsite Fenced Ditch System | | | Stn A has a low level of clear water. | | |
| Station A | | х | Stn B has a low level of tannic colored water. | | |
| Station B | | х | | | |
| West Ditch Foot Bridge | | | | | |
| Station C | | х | Filled in | | |
| Weir - Upstream | | | Stn D has a low level of tannic colored water. | | |
| Station D | х | | | | |
| Weir - Downstream | | | Stations E & F have a trickle flow of clear water. | | |
| Station E | х | | | | |
| Station F | х | | | | |
| Station G | х | | Stn G has a trickle flow of clear water. | | |
| Unnamed Ditch | | | Stn H is dry. | | |
| Station H | | х | Stn I has soft soil. | | |
| Station I | | Х | | | |
| Supplemental Inspection | | | | | |
| Locations (designate station location on page 2 of | | | | | |
| Staff Gauge Level | | | | | |
| Condition of Weir / Hay bale Barriers: | | | There is no flow from the weir and no | | |
| | a is low v | vith some | light scum on the water surface. The stream has no | | |
| flow and is very low, almost dry. | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| The Hay Bale line has no flow. | The Hav Bale line has no flow. | | | | |
| | | | | | |
| Picked up 7 ticks and noticed canine s | cat on the | e trail in s | everal locations. | | |

| Date | 7/20/2018 | Time | 0:30 | Inspectors | Leroy Johnson |
|------|-----------|------|------|------------|---------------|
| | | | | | |

| Station | Precipitate Observation | | Other Observations | | | |
|--------------------------------------------------|-------------------------|------------|---------------------------------------------------|--|--|--|
| Station | Yes | No | Other Observations | | | |
| Offsite Fenced Ditch System | | NO | Stn A has a low level of clear water. | | | |
| Station A | | | | | | |
| Station B | | X | Stn B has a normal level of clear water. | | | |
| West Ditch Foot Bridge | | | | | | |
| Station C | | x | Filled in | | | |
| Weir - Upstream | | ' <u> </u> | Stn D has a normal level of clear water. | | | |
| Station D | х | | | | | |
| Weir - Downstream | | | Stations E & F have a low flow of clear water. | | | |
| Station E | х | | | | | |
| Station F | х | | | | | |
| Station G | х | | Stn G has a low flow of clear water. | | | |
| Unnamed Ditch | | | Stn H is saturated soil. | | | |
| Station H | | X | Stn I has saturated soil. | | | |
| Station I | | х | | | | |
| Supplemental Inspection | | | | | | |
| Locations (designate | | | | | | |
| station location on page 2 of | | | | | | |
| Staff Gauge Level | | | | | | |
| Condition of Weir / Hay bale Barriers: | | | There is a low flow from the weir and a low | | | |
| flow from the outlet pipe. The main are | a is clear | . The stre | eam has a low flow with some light foaming at the | | | |
| check dams. | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| The Hay Bale line has a low flow of clear water. | | | | | | |
| | | | | | | |
| Picked up 4 ticks and saw one fox on t | he footbr | idge. | | | | |
| | | | | | | |

Wilmington Site Interim Action Plan

South and West Ditch Precipitate Inspection Report

| Date: | 7/25/2018 | Time: | 13:30 | Inspectors: Shawna lacozzi | |
|-------|-------------------------|-------|-------|----------------------------|--|
| ~ | 88°F; Sunny, hot, humid | | | | |

| | 1 _ | | | | | | |
|-------------------------------------------|-------------------------------------------------------------------------|--------------|-------------------------------------------------------------------------------------|--|--|--|--|
| | Precipitate | | | | | | |
| Station | Observation | | Other Observations | | | | |
| | Yes | No | | | | | |
| Off-site Fenced Ditch System | | 1 | | | | | |
| Station A | | Х | A: High level of tannic/cloudy water w/leaves on the bottom | | | | |
| Station B | | Х | B: Similar to Station A, baby ducks noted | | | | |
| | | | | | | | |
| West Ditch Foot Bridge | | | | | | | |
| Station C | | | C: Filled in | | | | |
| Weir - Upstream | | | | | | | |
| Station D | Х | | D: High level with little to no flow of clear to tannic water w/ leaves noted and a | | | | |
| | | | brown bottom | | | | |
| Weir - Downstream | | | | | | | |
| Station E | | х | E: Med. level and low flow of clear water w/ brown-rust bottom, mucky, frogs | | | | |
| Station F | | х | F: Low level and flow of clear water w/ brown-rust bottom | | | | |
| Station G | | Х | G: Very low water level, slight flow, clear water with brown bottom | | | | |
| | | | | | | | |
| Unnamed Ditch | | | | | | | |
| Station H | | х | H: Saturated soil | | | | |
| Station I | | х | I: Moist, slightly saturated soil | | | | |
| Supplemental Inspection | | | | | | | |
| Locations (designate station | | | | | | | |
| location on page 2 of 2) | | | | | | | |
| Staff Gauge Level | | | | | | | |
| Condition of Weir / Hay Bale Barriers: | | | | | | | |
| There was a low level and flow of clear w | ater from th | ne Weir Outl | et. No flow from the Plant B Outlet. | | | | |
| | | | en algae, and a brown-rust color was observed on the bottom. | | | | |
| The Hay Bale Line: Low level and flow of | | | - | | | | |
| | The may balle Line. Low level and new or clear water w. a brown bottom. | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |



Wood Environment & Infrastructure Solutions, Inc. 271 Mill Road, 3rd Floor Chelmsford, MA 01824 USA

T: 978-692-9090

www.woodplc.com

August 31, 2018

Wilmington Conservation Commission Town Hall 121 Glen Road Wilmington, MA 01887 Attn: Winifred McGowan

RE: Olin Corporation – DEP File #344-419 Weir Inspection Report – August 2018 Wood Project No. 6107-18-0016.04

Dear Commission:

This letter documents the weekly weir inspections carried out at the Olin Property in Wilmington, Massachusetts by Wood Environment & Infrastructure Solutions, Inc. (Wood) and Olin Corporation. The weekly weir inspection reports for the month of August 2018 are attached. Wood conducted an inspection on Friday, August 31, 2018.

West Ditch Off-Property

Stations A and B had a low level of clear water during the first four inspections of the month and a normal level of clear water with no flow with submerged leaves and a brown-rust color stream bottom during the fifth and final inspection of the month.

Weir

Station D had a low level of clear water during the first four inspections of the month. During the fifth and final inspection of the month, Station D had a high level of clear water with submerged leaves and a brown color stream bottom. Some foam was also noted during the fifth inspection of the month.

There was no flow from the Weir or Plant B outlets during the first two inspections. During the third, fourth and fifth inspections there was very low flow from the Weir and no flow from the Plant B outlet pipe. The main area was mostly clear for all five inspections, with pools of standing water but little to no flow noted during the first four inspections. There was a low level of water noted during the fifth and final inspection.

South Ditch Downstream of the Weir

Stations E and F had no flow during the first and second inspections of the month. For the third and fourth inspection of the month, Stations E and F in the South Ditch had a very low level and flow of clear water. During the fifth and final inspection Stations E and F had a low level and flow of clear water, with submerged leaves and a brown-rust color observed on the stream bottom. Station G had no flow the first, second and fifth inspections of the month. During the third and fourth inspections, Station G had a very low level and flow of clear water.



Page 2

The hay bale line had no flow during the first two inspections of the month. A very low flow of clear water was observed during the third, fourth and fifth inspections.

Wetland Areas South of the South Ditch

Stations H and I were dry during the first two inspections of the month. During the third, and fourth inspections, both stations had saturated soil. During the fifth and final inspection of the month, Station H had saturated soil while Station I was dry.

Sincerely,

Wood Environment & Infrastructure Solutions, Inc.

Chris Mazzolini

Senior Project Scientist

Chris Plantin

Michael J. Murphy Project Principal

An of Murphy

Attachments

cc: Mr. James Cashwell, Olin Corp. (Electronic)

Mr. Chinny Esakkiperumal, Olin Corp.

Mr. Brian Guichard, Olin Corp.

Mr. Jim DiLorenzo, EPA

Mr. Garry Waldeck, MassDEP - Boston

Wood Project File

Interim Action Plan

South and West Ditch Inspection Report

| Date | 8/3/2018 | Time | 12:30 | Inspectors | Leroy Johnson |
|------|----------|------|-------|------------|---------------|
|------|----------|------|-------|------------|---------------|

| Station | Precipitate Observation Yes No | | Other Observations | | |
|---------------------------------------------------------------------------------------------------------------|--------------------------------|------------|------------------------------------------------------|--|--|
| Offsite Fenced Ditch System | 100 | 140 | Stn A has a low level of clear water. | | |
| Station A | | х | Stn B has a low level of clear water. | | |
| Station B | | х | | | |
| West Ditch Foot Bridge | | | | | |
| Station C | | х | Filled in | | |
| Weir - Upstream | | | Stn D has a low level of clear water. | | |
| Station D | х | | | | |
| Weir - Downstream | | | Stations E & F have no flow. | | |
| Station E | х | | | | |
| Station F | х | | | | |
| Station G | х | | Stn G has no flow. | | |
| Unnamed Ditch | | | Stn H is dry. | | |
| Station H | | х | Stn I is dry. | | |
| Station I | | Х | | | |
| Supplemental Inspection | | | | | |
| Locations (designate station location on page 2 of | | | | | |
| Staff Gauge Level | | | | | |
| Condition of Weir / Hay bale Barriers: | | | There is no flow from the weir and no flow | | |
| | mostly cle | ear. The s | stream has some pools of standing water but no flow. | | |
| Total and dates, pipe. The main area is mostly diear. The decent has some pools of standing water but no now. | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| The Hay Bale line has no flow. | | | | | |
| Picked up 7 ticks. | | | | | |

| Date | 8/10/2018 | Time | 10:30 | Inspectors | Leroy Johnson | |
|------|-----------|------|-------|------------|---------------|--|
| | | | | - | | |

| Station | Precipitate Observation | | Other Observations | | |
|----------------------------------------|-------------------------|----------|--------------------------------------------------|--|--|
| | Yes No | | | | |
| Offsite Fenced Ditch System | | | Stn A has a low level of clear water. | | |
| Station A | | х | Stn B has a low level of clear water. | | |
| Station B | | х | | | |
| West Ditch Foot Bridge | | | | | |
| Station C | | х | Filled in | | |
| Weir - Upstream | | | Stn D has a low level of clear water. | | |
| Station D | х | | | | |
| Weir - Downstream | | | Stations E & F have no flow. | | |
| Station E | х | | | | |
| Station F | х | | | | |
| Station G | х | | Stn G has no flow. | | |
| Unnamed Ditch | | | Stn H is dry. | | |
| Station H | | х | Stn I is dry. | | |
| Station I | 2 | х | | | |
| Supplemental Inspection | | | | | |
| Locations (designate | | | l. | | |
| station location on page 2 of | | | | | |
| Staff Gauge Level | | | | | |
| Condition of Weir / Hay bale Barriers: | | | There is no flow from the weir and no flow | | |
| from the outlet pipe. The main area is | mostly cle | ear. The | stream is mostly dry with some pools of standing | | |
| water. | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| The Hay Bale line has no flow. | | | | | |
| | | | | | |
| Picked up 3 ticks. | | | | | |
| 1 long ap a dens. | | | | | |

| Date | 8/17/2018 | Time | 10:30 | Inspectors | Leroy Johnson |
|------|-----------|------|-------|------------|---------------|
| - | | | | | |

| | Precipitate | | | | | |
|----------------------------------------------------------------------------------------------------|--------------------|---|---------------------------------------------------|--|--|--|
| Station | Obser | | Other Observations | | | |
| | Yes No | | | | | |
| Offsite Fenced Ditch System | | | Stn A has a low level of clear water. | | | |
| Station A | | х | Stn B has a low level of clear water. | | | |
| Station B | | х | | | | |
| West Ditch Foot Bridge | | | | | | |
| Station C | | x | Filled in | | | |
| Weir - Upstream | | | Stn D has a low level of clear water. | | | |
| Station D | х | | | | | |
| Weir - Downstream | | | Stations E & F have a trickle of clear water. | | | |
| Station E | х | | | | | |
| Station F | х | | | | | |
| Station G | х | | Stn G has a trickle flow of clear water. | | | |
| Unnamed Ditch | | | Stn H is saturated soil. | | | |
| Station H | | х | Stn I is saturated soil. | | | |
| Station I | | х | | | | |
| Supplemental Inspection | | | | | | |
| Locations (designate | | | | | | |
| station location on page 2 of | | | | | | |
| Staff Gauge Level | | | | | | |
| Condition of Weir / Hay bale Barriers: | | | There is a trickle flow from the weir and no flow | | | |
| from the outlet pipe. The main area is mostly clear. The stream has a trickle flow of clear water. | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| The Hay Bale line has a trickle flow. | | | | | | |
| | | | | | | |
| Picked up 2 ticks. | | | | | | |
| | Picked up 2 ticks. | | | | | |

| | Date | 8/24/2018 | Time | 8:30 | Inspectors | Leroy Johnson |
|--|------|-----------|------|------|------------|---------------|
|--|------|-----------|------|------|------------|---------------|

| Station | | | Other Observations | | |
|------------------------------------------|------------|------------|---------------------------------------------------|--|--|
| | Yes No | | | | |
| Offsite Fenced Ditch System | | | Stn A has a low level of clear water. | | |
| Station A | | Х | Stn B has a low level of clear water. | | |
| Station B | | Х | | | |
| West Ditch Foot Bridge | | | | | |
| Station C | | х | Filled in | | |
| Weir - Upstream | | | Stn D has a low level of clear water. | | |
| Station D | х | | | | |
| Weir - Downstream | | | Stations E & F have a trickle of clear water. | | |
| Station E | х | | | | |
| Station F | х | | | | |
| Station G | x | | Stn G has a trickle flow of clear water. | | |
| Unnamed Ditch | | | Stn H is saturated soil. | | |
| Station H | | х | Stn I is saturated soil. | | |
| Station I | | х | | | |
| Supplemental Inspection | | | | | |
| Locations (designate | | | | | |
| station location on page 2 of | | | | | |
| Staff Gauge Level | | | | | |
| Condition of Weir / Hay bale Barriers: | | | There is a trickle flow from the weir and no flow | | |
| from the outlet pipe. The main area is r | mostly cle | ear. The s | stream has a trickle flow of clear water. | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| The Hay Bale line has a trickle flow. | | | | | |
| | | | | | |
| Picked up 4 ticks. | | | | | |
| | | | | | |

Interim Action Plan

South and West Ditch Precipitate Inspection Report

| Date: | 8/31/2018 | Time: | 10:20 | Inspectors: Shawna lacozzi |
|-------|--------------------------|-------|-------|----------------------------|
| ^ | ~80°F; Sunny, hot, humid | _ | | |

| Station | | ipitate ervation | Other Observations | | | |
|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|---------------------|-----------------------------------------------------------------------------|--|--|--|
| | Yes | No | | | | |
| Off-site Fenced Ditch System | · | -1 | | | | |
| Station A | | х | A and B: Normal level of clear water, no flow, organic sheen noted, | | | |
| Station B | | х | submerged leaves, and frogs observed | | | |
| | | | | | | |
| West Ditch Foot Bridge | | | | | | |
| Station C | | | C: Filled in | | | |
| Weir - Upstream | 1 | 1 | | | | |
| Station D | Х | | D: High level of clear water, no flow, w/ floating leaves, and a brown foam | | | |
| Weir - Downstream | <u> </u> | | | | | |
| Station E | | х | E: Low level and flow of clear water w/ brown-rust bottom, muck and frogs | | | |
| Station F | | х | F: Low level and flow of clear water w/ brown-rust bottom | | | |
| Station G | | х | G: Standing water with saturated soil | | | |
| | | | | | | |
| Unnamed Ditch | | | | | | |
| Station H | | х | H: Saturated soil, no water | | | |
| Station I | | х | I: Dry | | | |
| Supplemental Inspection | | | | | | |
| Locations (designate station | | | | | | |
| location on page 2 of 2) | | | | | | |
| Staff Gauge Level | | | | | | |
| Condition of Weir / Hay Bale Barriers: | Condition of Weir / Hay Bale Barriers: | | | | | |
| There was a very low level and flow of clear water from the Weir Outlet. No flow from the Plant B Outlet. | | | | | | |
| The Main Area: Low level and very low flo | The Main Area: Low level and very low flow of clear water, a brown-rust color was observed on the bottom. | | | | | |
| The Hay Bale Line: Very low level and flow of clear water w/ a brown bottom. | | | | | | |
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Wood Environment & Infrastructure Solutions, Inc. 271 Mill Road, 3rd Floor Chelmsford, MA 01824 USA

T: 978-692-9090

www.woodplc.com

September 28, 2018

Wilmington Conservation Commission Town Hall 121 Glen Road Wilmington, MA 01887 Attn: Winifred McGowan

RE: Olin Corporation – DEP File #344-419 Weir Inspection Report – September 2018 Wood Project No. 6107-18-0016.04

Dear Commission:

This letter documents the weekly weir inspections carried out at the Olin Property in Wilmington, Massachusetts by Wood Environment & Infrastructure Solutions, Inc. (Wood) and Olin Corporation. The weekly weir inspection reports for the month of September 2018 are attached. Wood conducted an inspection on Friday, September 28, 2018.

West Ditch Off-Property

Station A had a low level of clear water during all four inspections of the month. Station B had a low level of clear water during the first two inspections of the month and a normal level of clear water during the third and fourth inspection of the month.

Weir

Station D had a low level of clear water during the first three inspections of the month. During the fourth and final inspection of the month, Station D had a normal level and low flow of clear water with submerged leaves and a brown color stream bottom.

There was a very low flow of clear water from the Weir outlet and a low flow from the Plant B outlet during the first and third inspections of the month. There was no flow from either outlet during the second inspection of the month. At the time of the fourth and final inspection of the month there was low flow of clear water from the Weir outlet and no flow from the Plant B outlet. The main area had a low level and flow of clear water during all four inspections.

South Ditch Downstream of the Weir

Stations E and F had a very low flow of clear water during the first two inspections of the month. There was a low level and flow of clear water during the third inspection of the month. For the fourth and final inspection of the month, Stations E & F in the South Ditch had a normal level and flow of clear water with an orange-rust to brown color stream bottom. Station G had a very low level and flow of clear water during all four inspections of the month. During the fourth inspection, a brown-rust color was observed on the stream bottom.

The hay bale line had a very low flow of clear water during the three inspections of the month. A low level and flow of clear water with and a brown stream bottom was observed during the fourth inspection of the month.



Wetland Areas South of the South Ditch

During the first three inspections of the month Stations H & I had some standing water. During the fourth and final inspection of the month Station H consisted of saturated ground while Station I was flooded.

Sincerely,

Wood Environment & Infrastructure Solutions, Inc.

Chris Mazzolini

Senior Project Scientist

This Plantin

Michael J. Murphy

Project Principal

An of Murphy

Attachments

cc: Mr. James Cashwell, Olin Corp. (Electronic)

Mr. Chinny Esakkiperumal, Olin Corp.

Mr. Brian Guichard, Olin Corp.

Mr. Jim DiLorenzo, EPA

Mr. Garry Waldeck, MassDEP - Boston

Wood Project File

[P:\old_Wakefield_Data\projects\OLIN\Wilmington\South Ditch\Monthly Inspections\2018\2018-09\September 2018.docx]

| Date | 9/7/2018 | Time | 11:30 | Inspectors | Leroy Johnson |
|------|----------|------|-------|------------|---------------|
| | | | | | |

| Station | Preci Obser Yes | pitate vation No | Other Observations | | |
|--------------------------------------------------------------------------------------------------------------|-----------------------|------------------------|------------------------------------------------------|--|--|
| Offsite Fenced Ditch System | 163 | 140 | Stn A has a low level of clear water. | | |
| Station A | | х | Stn B has a low level of clear water. | | |
| Station B | | x | | | |
| West Ditch Foot Bridge | | | | | |
| Station C | | х | Filled in | | |
| Weir - Upstream | | | Stn D has a low level of clear water. | | |
| Station D | х | | | | |
| Weir - Downstream | | | Stations E & F have a trickle of clear water. | | |
| Station E | х | | | | |
| Station F | х | | | | |
| Station G | х | | Stn G has a trickle flow of clear water. | | |
| Unnamed Ditch | | | Stn H has some stading water. | | |
| Station H | | х | Stn I has some standing water. | | |
| Station I | | х | | | |
| Supplemental Inspection | | | | | |
| Locations (designate station location on page 2 of | | | | | |
| Staff Gauge Level | | L | | | |
| Condition of Weir / Hay bale Barriers: | | | There is a trickle flow from the weir and a low flow | | |
| from the outlet pipe. The main area is mostly clear and is about 50% covered with white scum. The stream has | | | | | |
| a low flow of clear water. | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| The Hay Bale line has a trickle flow. | | | | | |
| | | | | | |
| Noticed what was either a young coyo | e or a for | near the | e foot bridge. | | |
| Noticed what was elitier a young coyote or a lox flear the loot bridge. | | | | | |

| Date | 9/14/2018 | Time | 1:30 | Inspectors | Leroy Johnson |
|------|-----------|------|------|------------|---------------|
| | | | | | |

| | Precipitate | | | | | |
|----------------------------------------------------------------------------------------------------|-------------|--------|-----------------------------------------------|--|--|--|
| Station | | vation | Other Observations | | | |
| | Yes | No | | | | |
| Offsite Fenced Ditch System | | | Stn A has a low level of clear water. | | | |
| Station A | | х | Stn B has a low level of clear water. | | | |
| Station B | | х | | | | |
| West Ditch Foot Bridge | | | | | | |
| Station C | | х | Filled in | | | |
| Weir - Upstream | | | Stn D has a low level of clear water. | | | |
| Station D | х | | | | | |
| Weir - Downstream | | | Stations E & F have a trickle of clear water. | | | |
| Station E | х | | | | | |
| Station F | х | | | | | |
| Station G | х | | Stn G has a trickle flow of clear water. | | | |
| Unnamed Ditch | | | Stn H has some stading water. | | | |
| Station H | | х | Stn I has some standing water. | | | |
| Station I | | х | | | | |
| Supplemental Inspection | | | | | | |
| Locations (designate | | | | | | |
| station location on page 2 of | | | | | | |
| Staff Gauge Level | | | | | | |
| Condition of Weir / Hay bale Barriers: | | | There is no flow from the weir and no flow | | | |
| from the outlet pipe. The main area is mostly clear. The stream has a trickle flow of clear water. | | | | | | |
| Vegetation is beginning to die for the winter season. | | | | | | |
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| The Hay Bale line has a trickle flow. | | | | | | |
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| Date | 9/20/2018 | Time | 8:30 | Inspectors | Leroy Johnson |
|------|-----------------------------------------|------|------|------------|---------------|
| | * * * * * * * * * * * * * * * * * * * * | - | | | |

| Station | 11 | pitate | Other Observations | | | |
|---------------------------------------------------------------------------------|------------|------------|------------------------------------------------------|--|--|--|
| Station | | vation | Other Observations | | | |
| | Yes | No | | | | |
| Offsite Fenced Ditch System | T | | Stn A has a low level of clear water. | | | |
| Station A | | Х | Stn B has a normal level of clear water. | | | |
| Station B | | Х | | | | |
| West Ditch Foot Bridge | | | | | | |
| Station C | | Х | Filled in | | | |
| Weir - Upstream | | | Stn D has a low level of clear water. | | | |
| Station D | х | | | | | |
| Weir - Downstream | | | Stations E & F have a low of clear water. | | | |
| Station E | х | | | | | |
| Station F | х | | | | | |
| Station G | х | | Stn G has a trickle flow of clear water. | | | |
| Unnamed Ditch | | | Stn H has some stading water. | | | |
| Station H | | х | Stn I has some standing water. | | | |
| Station I | | х | | | | |
| Supplemental Inspection | | | | | | |
| Locations (designate | | | | | | |
| station location on page 2 of | 1 | | | | | |
| Staff Gauge Level | | | | | | |
| Condition of Weir / Hay bale Barriers: | | | There is a trickle flow from the weir and a low flow | | | |
| from the outlet pipe. The main area is | mostly cle | ear. The s | stream has a low flow of clear water. | | | |
| The walking trail is extremely muddy and has multiple animal trails throughout. | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| The Hay Bale line has a trickle flow. | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Wilmington Site Interim Action Plan

South and West Ditch Precipitate Inspection Report

| Date: | 9/28/2018 | Time: | 12:30 | Inspectors: Shawna lacozzi |
|-------|-------------------|----------------|-------|----------------------------|
| | ~65°F; light rain | · - | | |

| | I | | | | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|-----------------------------------------------------------------------------|--|--|--|
| | Precipitate | | Other Observations | | | |
| Station | Observation | | | | | |
| | Yes | No | | | | |
| Off-site Fenced Ditch System | | _ | | | | |
| Station A | | Х | A: Low level of clear water, no flow, submerged leaves | | | |
| Station B | | х | B: Normal level of clear water, no flow, submerged leaves, frogs | | | |
| | | | | | | |
| West Ditch Foot Bridge | | | | | | |
| Station C | | | C: Filled in | | | |
| Weir - Upstream | | | | | | |
| Station D | х | | D: Normal level of clear water w/ submerged leaves and a rust orange bottom | | | |
| | | | | | | |
| Weir - Downstream | | | | | | |
| Station E | | х | E: Normal level and flow of clear water w/ a brown-rust bottom | | | |
| Station F | | х | F: Normal level and flow of clear water w/ a brown-rust bottom | | | |
| Station G | | х | G: Very low flow of clear water | | | |
| | | | | | | |
| Unnamed Ditch | | | | | | |
| Station H | | х | H: Saturated soil, some standing water | | | |
| Station I | | Х | I: Flooded | | | |
| Supplemental Inspection | | | | | | |
| Locations (designate station | | | | | | |
| location on page 2 of 2) | | | | | | |
| Staff Gauge Level | | | | | | |
| Condition of Weir / Hay Bale Barriers: | • | | | | | |
| • | ater from th | ne Weir Outl | et. No flow from the Plant B Outlet. | | | |
| There was a low level and flow of clear water from the Weir Outlet. No flow from the Plant B Outlet. The Main Area: Low level and flow of clear water, a brown-rust color was observed on the bottom. | | | | | | |
| The Hay Bale Line: Low level and flow of clear water w/ a brown bottom. | | | | | | |
| The Hay Date Line. Low level and now of clear water wil a brown bottom. | | | | | | |
| | | | | | | |
| | | | | | | |
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| | | | | | | |
| | | | | | | |

wood.

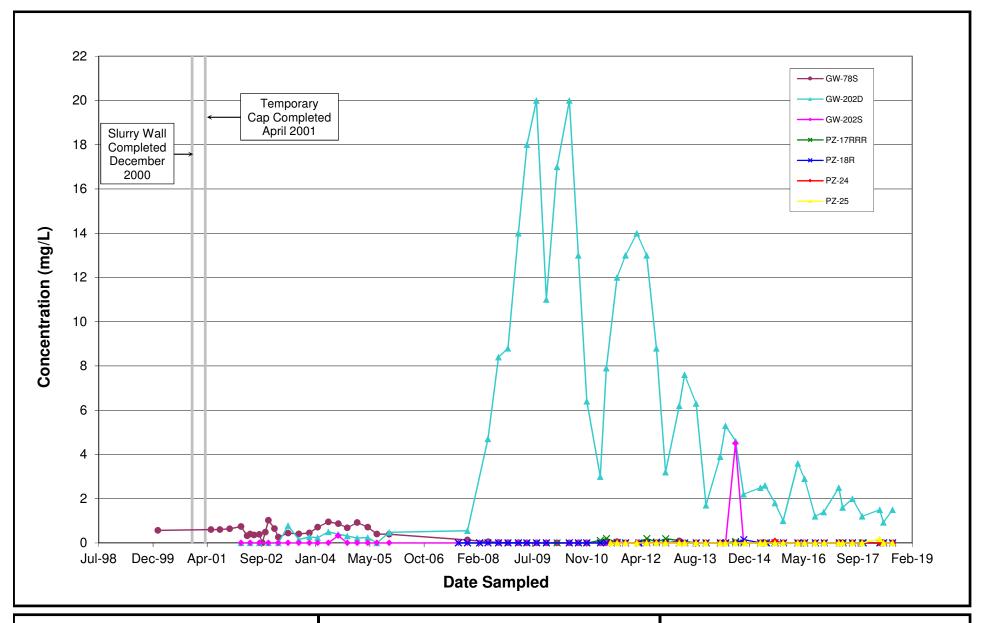
Appendix D

Slurry Wall/Cap Groundwater and Surface Water Time Series Plots

wood.

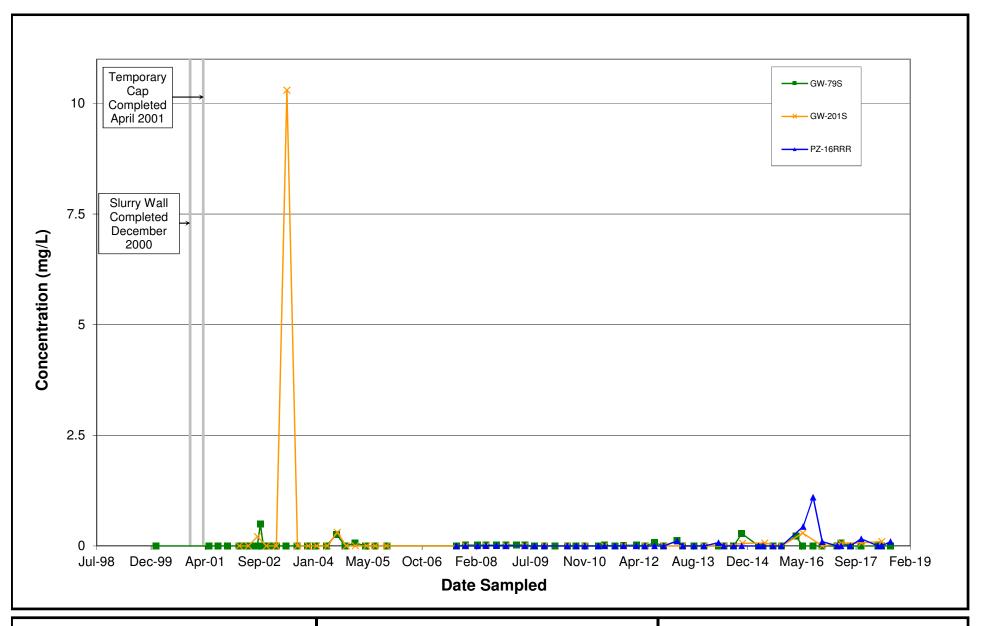
Appendix D1

Groundwater (Aluminum, Ammonia, Chloride, Chromium, Sulfate)



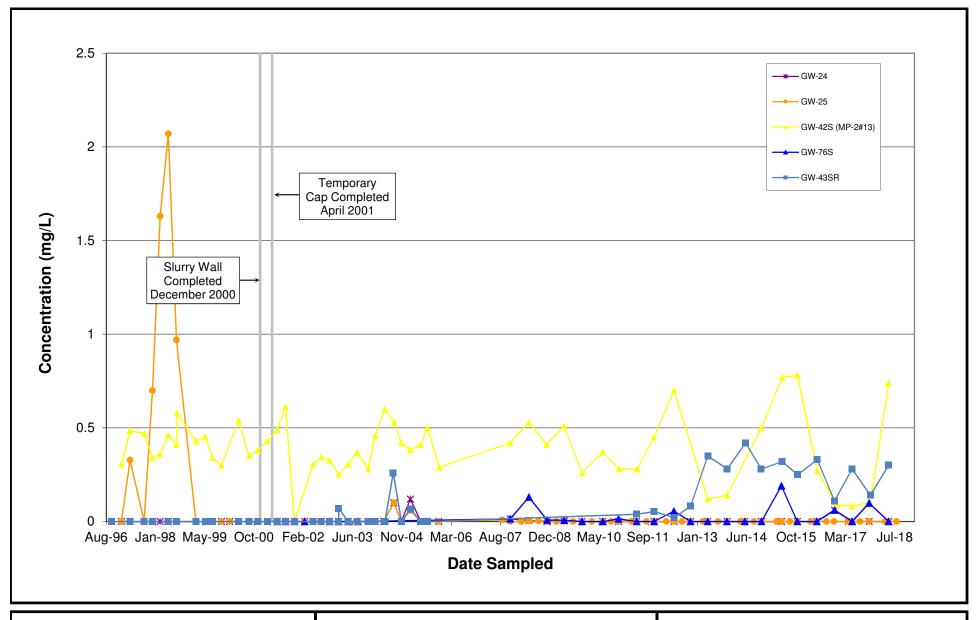


Filtered Aluminum in Groundwater South of Containment Structure



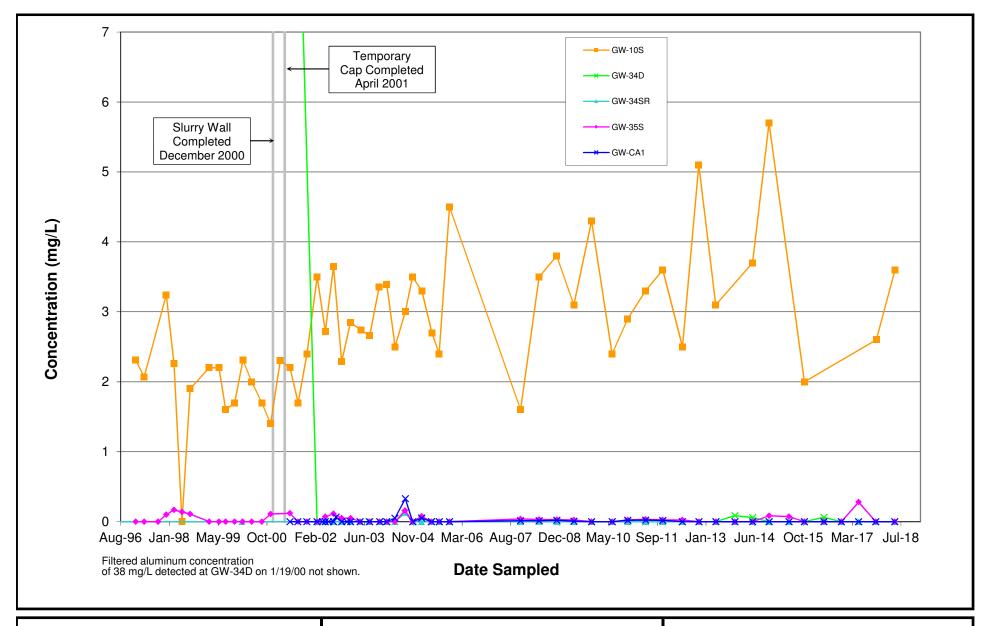
wood.

Filtered Aluminum in Groundwater Southeast of Containment Structure



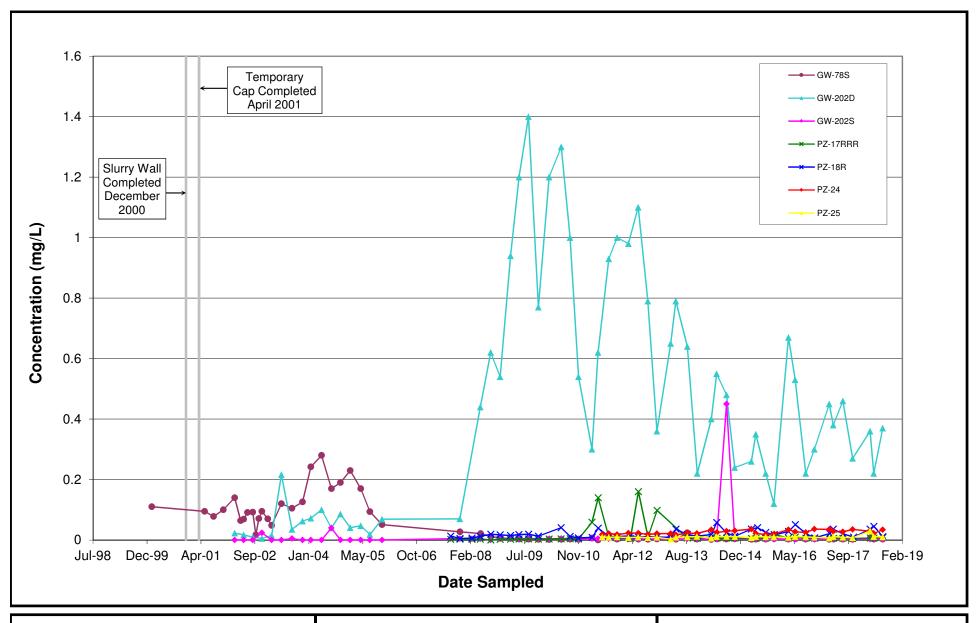
wood.

Filtered Aluminum in Groundwater West of Containment Structure



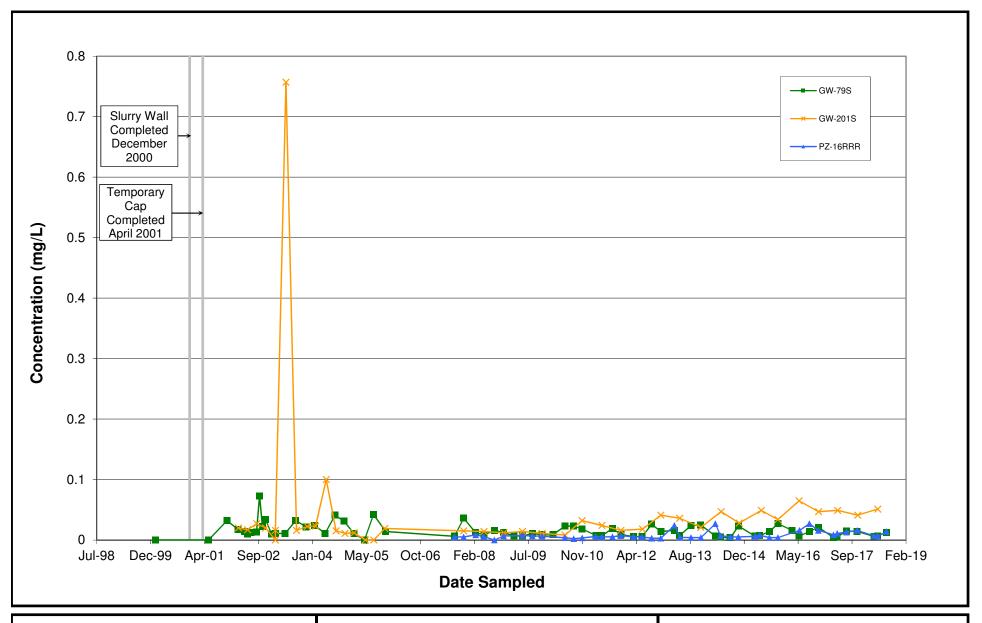


Filtered Aluminum in Groundwater North of Containment Structure



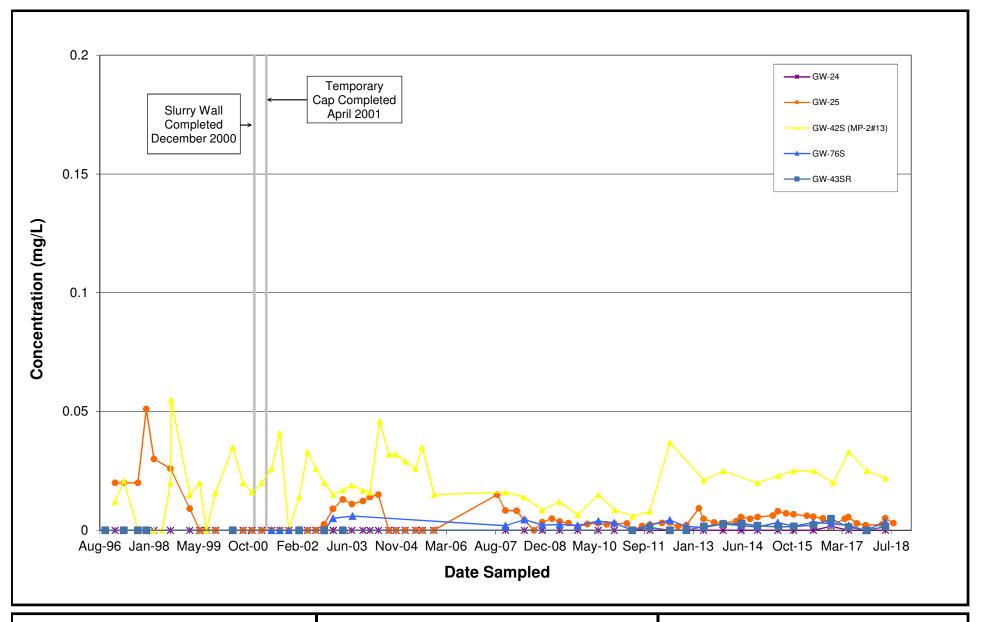


Filtered Chromium in Groundwater South of Containment Structure



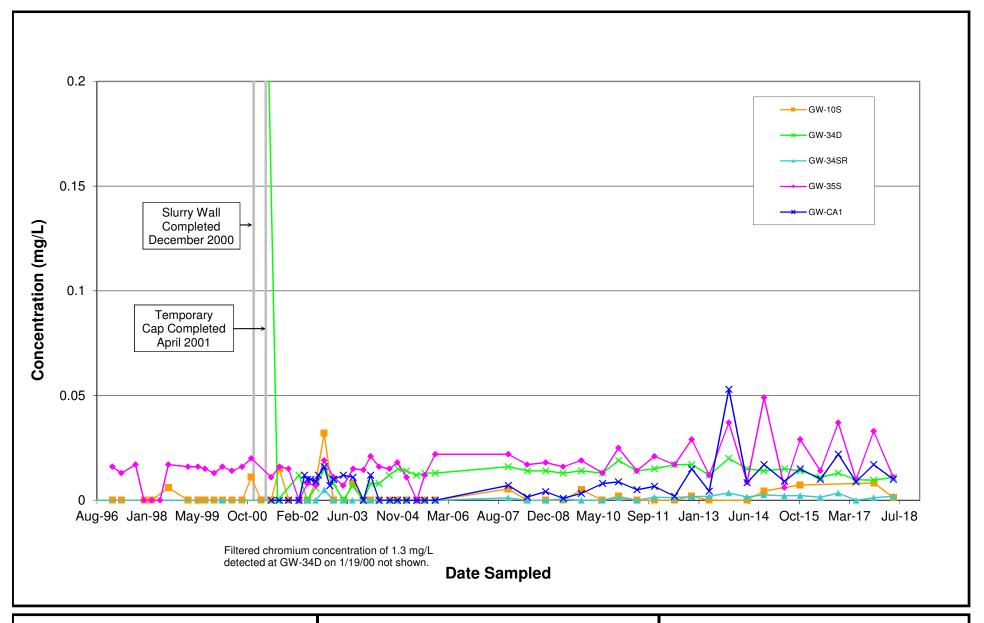


Filtered Chromium in Groundwater Southeast of Containment Structure



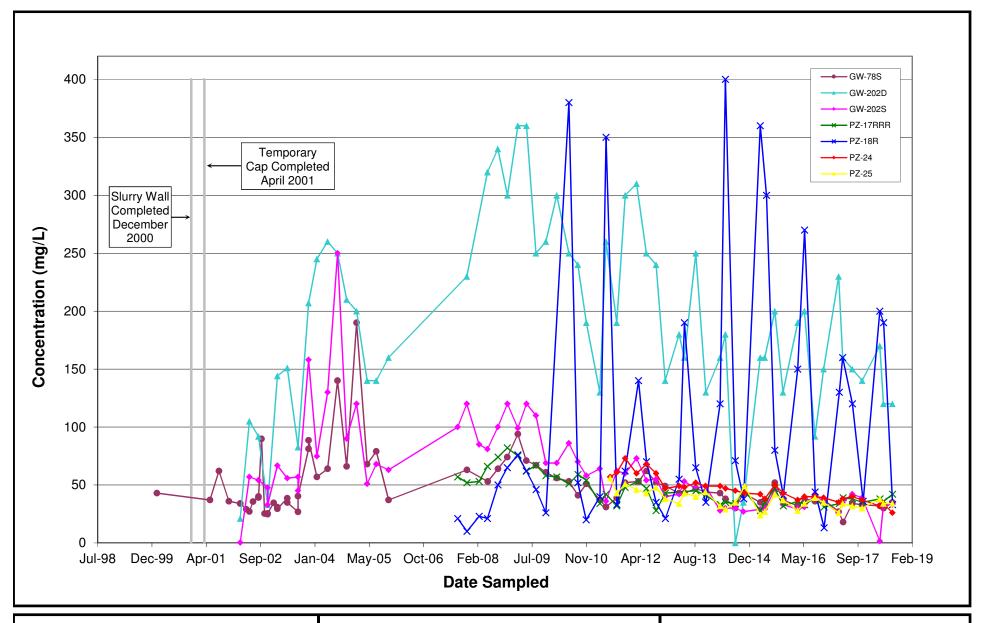


Filtered Chromium in Groundwater West of Containment Structure



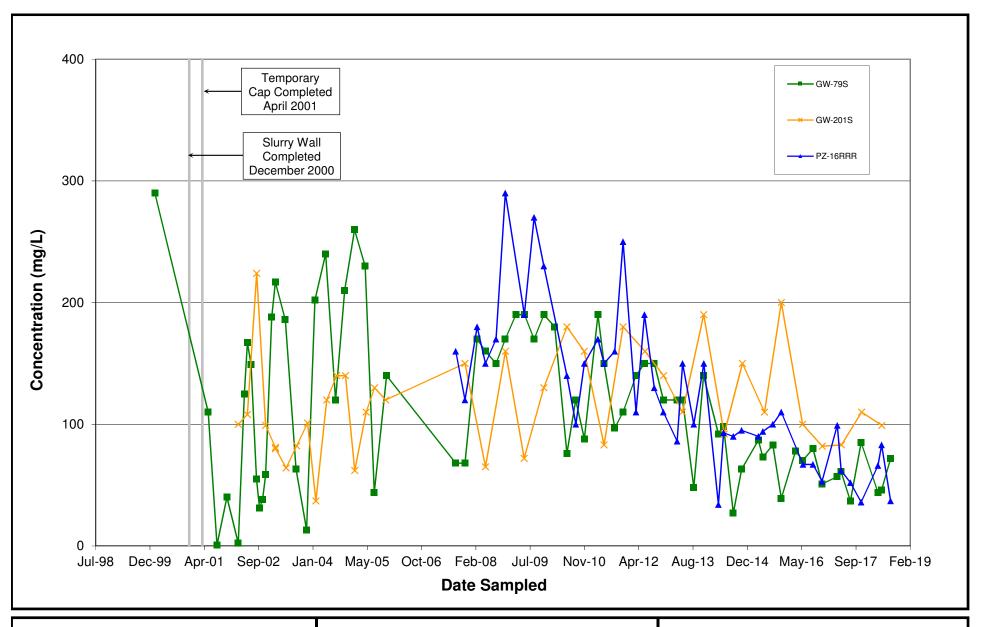
wood.

Filtered Chromium in Groundwater North of Containment Structure



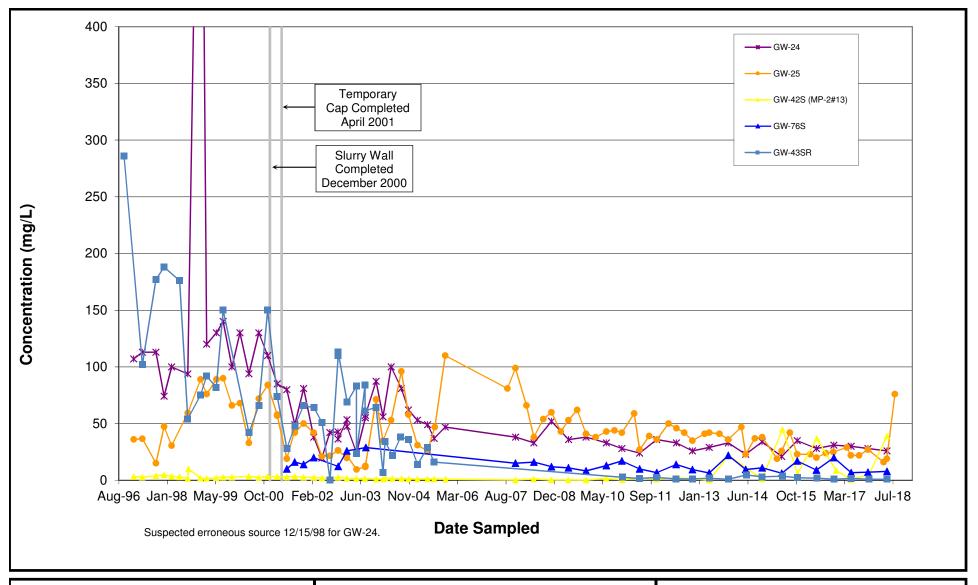


Ammonia in Groundwater South of Containment Structure



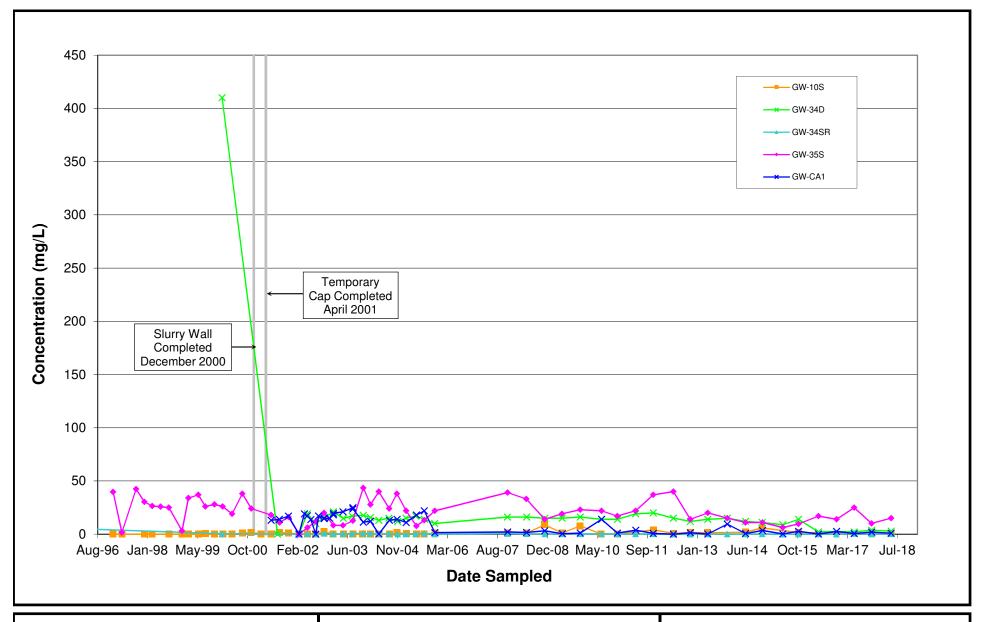
wood.

Ammonia in Groundwater Southeast of Containment Structure



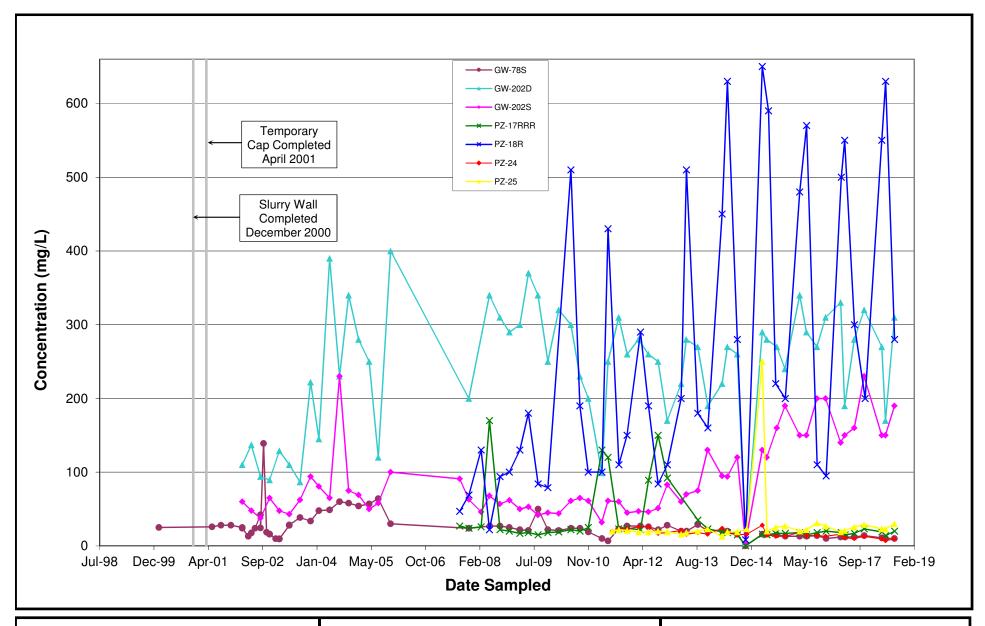
wood.

Ammonia in Groundwater West of Containment Structure



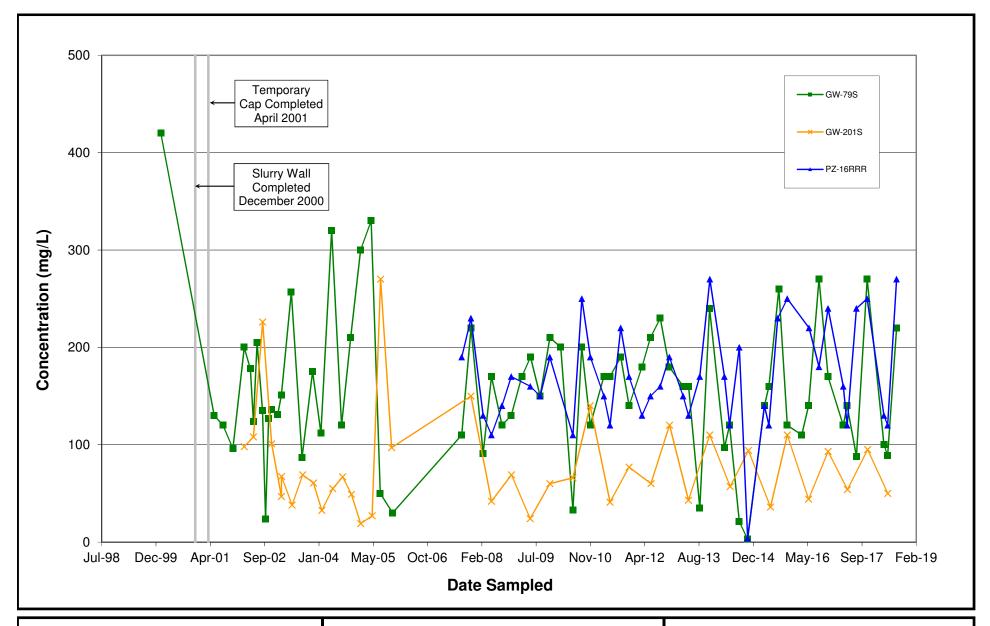
wood.

Ammonia in Groundwater North of Containment Structure



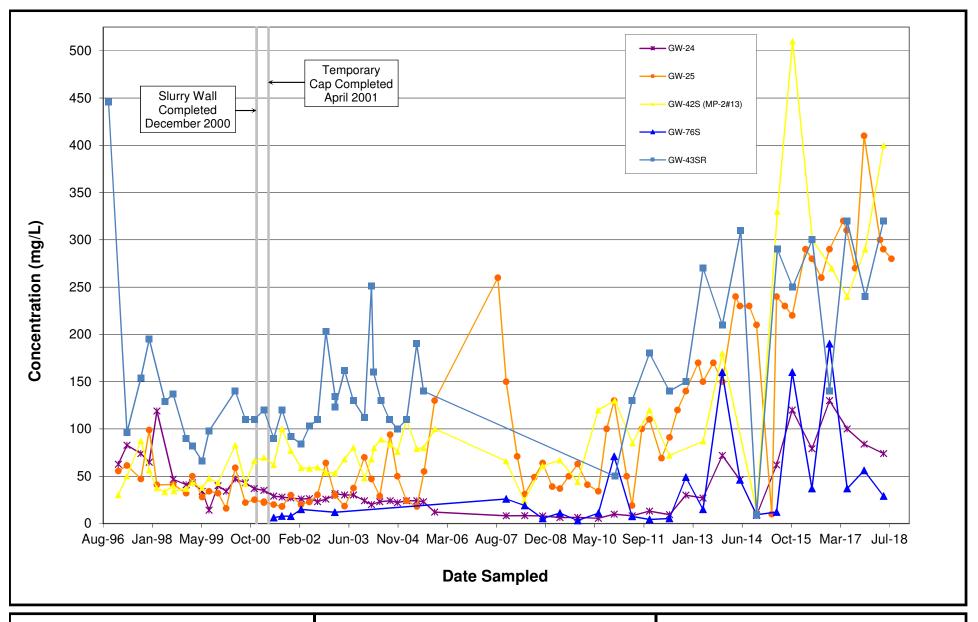
wood.

Chloride in Groundwater South of Containment Structure



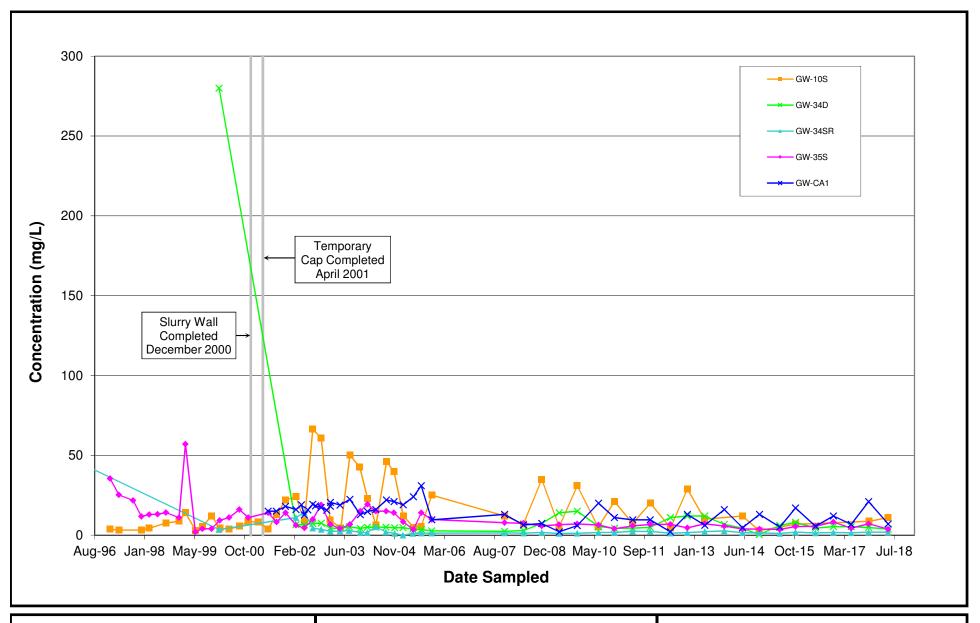


Chloride in Groundwater Southeast of Containment Structure



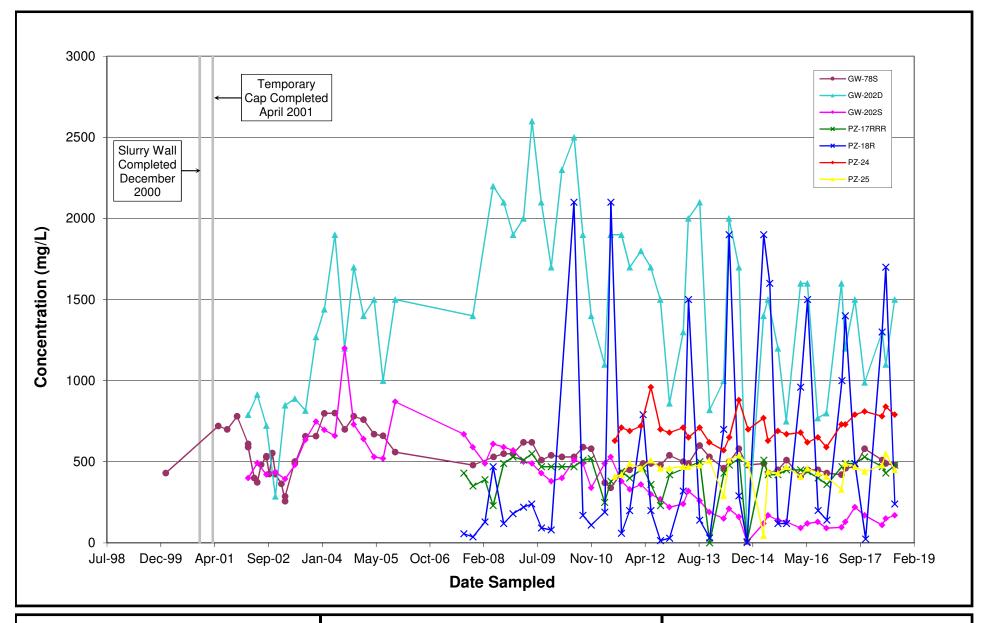
wood.

Chloride in Groundwater West of Containment Structure



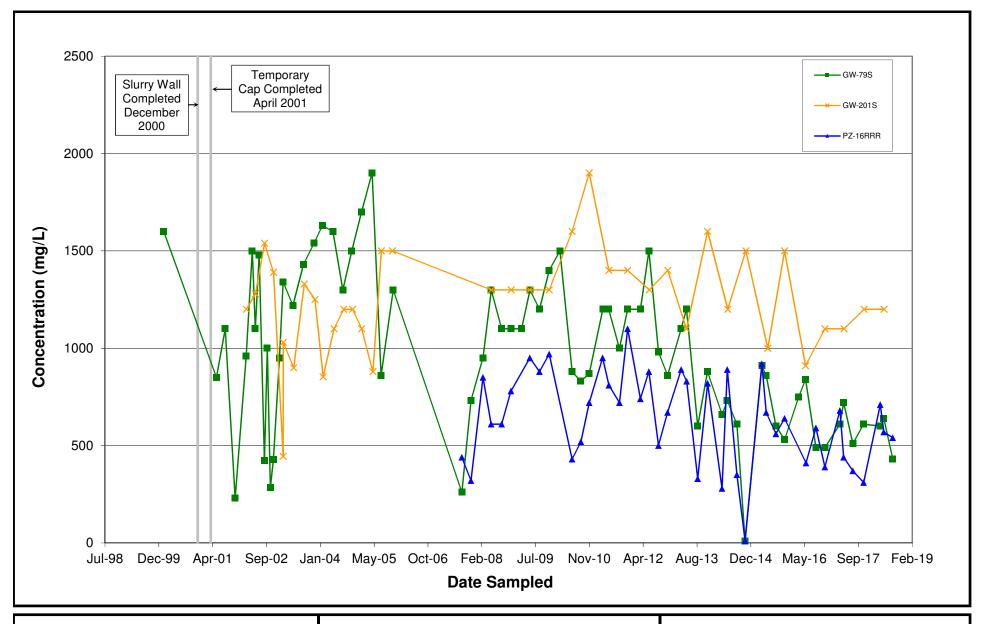
wood.

Chloride in Groundwater North of Containment Structure



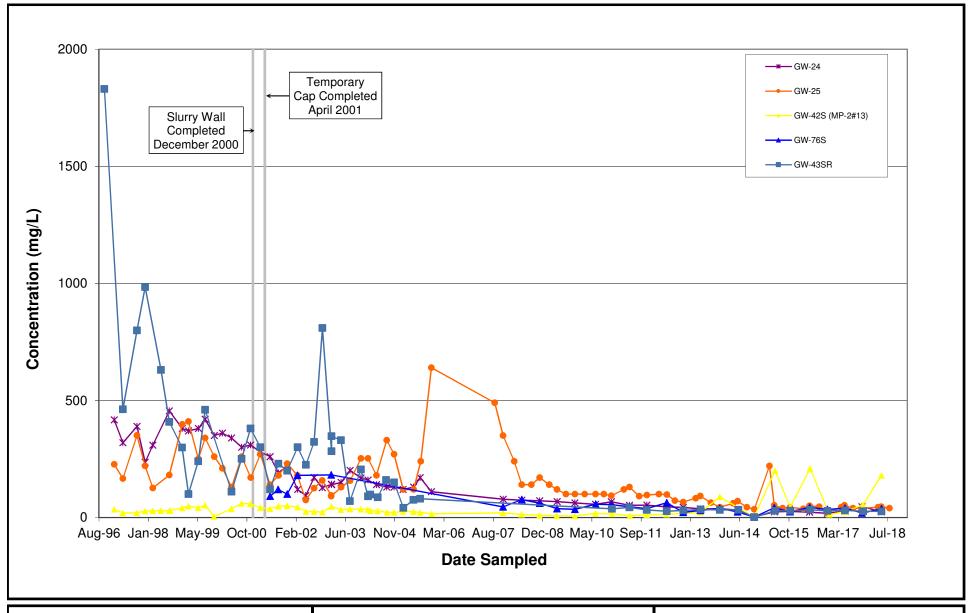
wood.

Sulfate in Groundwater South of Containment Structure



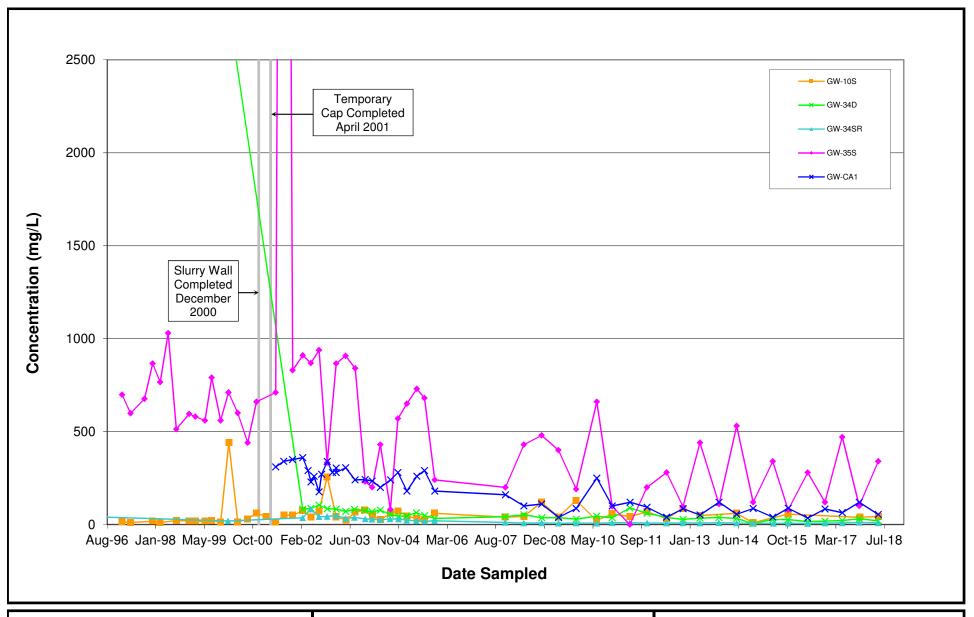
wood.

Sulfate in Groundwater Southeast of Containment Structure



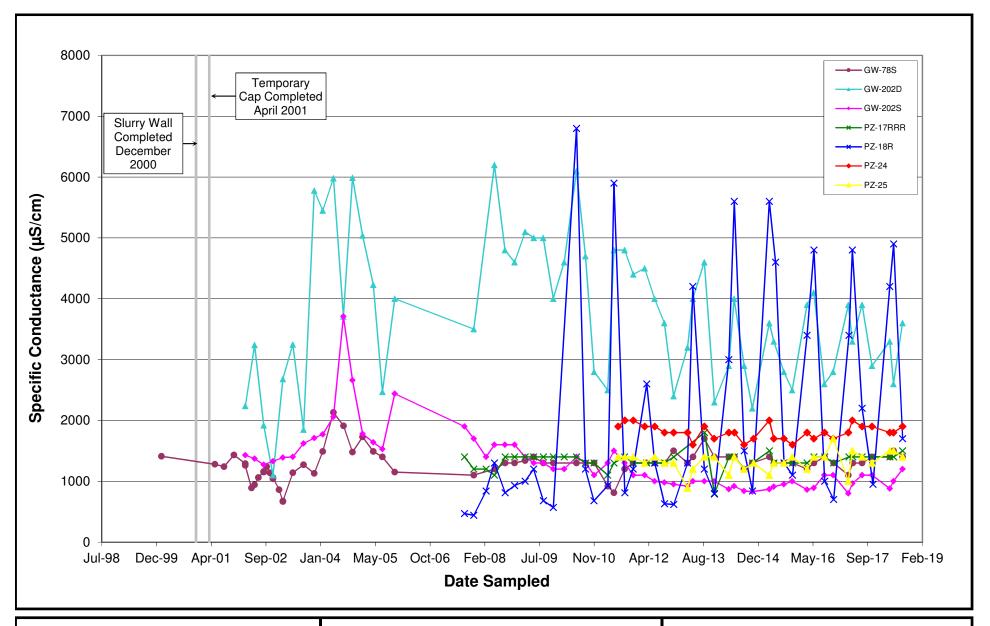
wood.

Sulfate in Groundwater West of Containment Structure



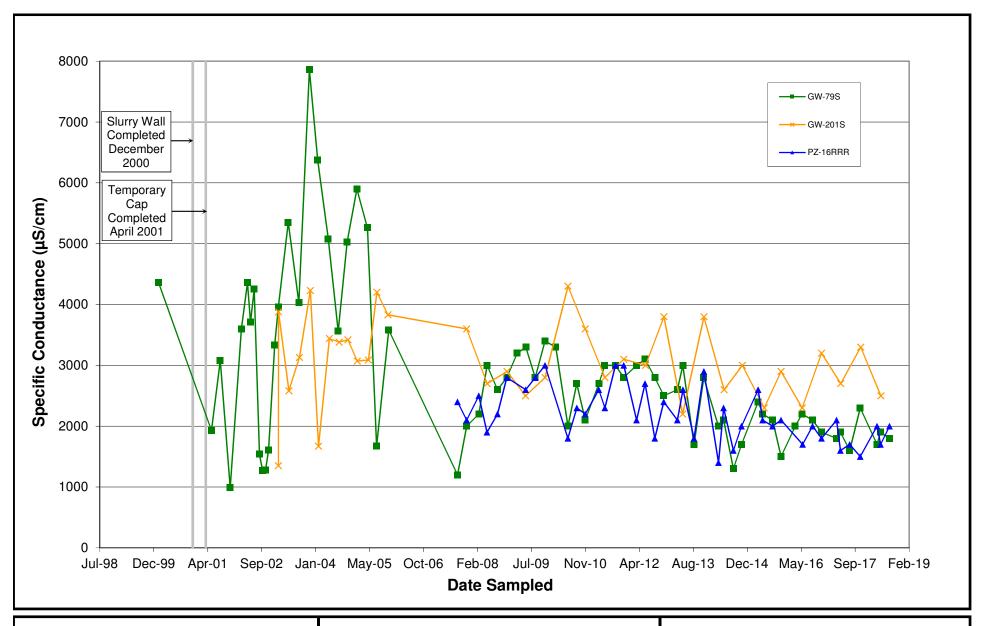
wood.

Sulfate in Groundwater North of Containment Structure



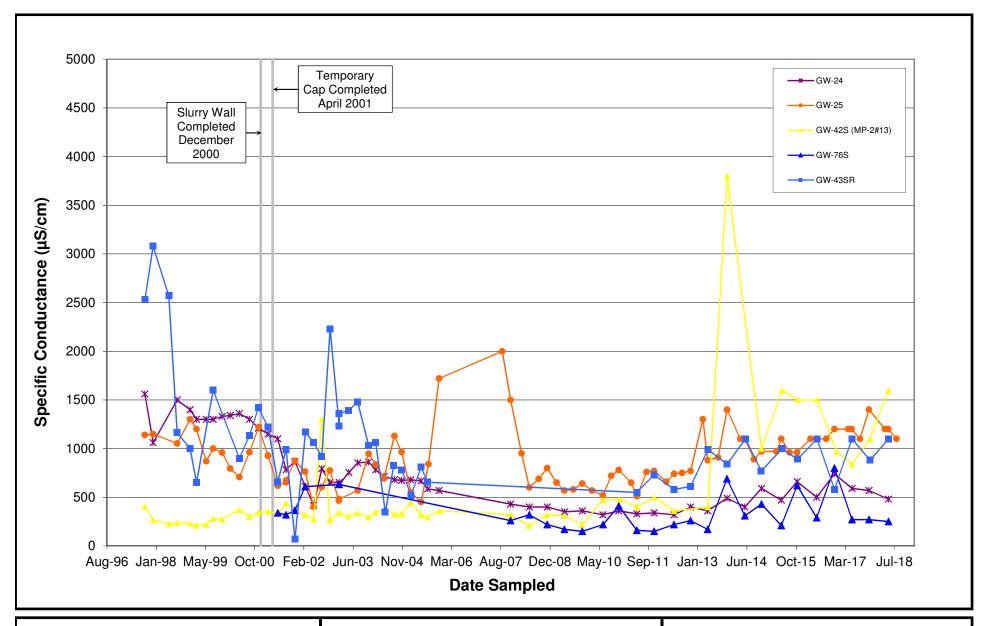


Specific Conductance in Groundwater South of Containment Structure



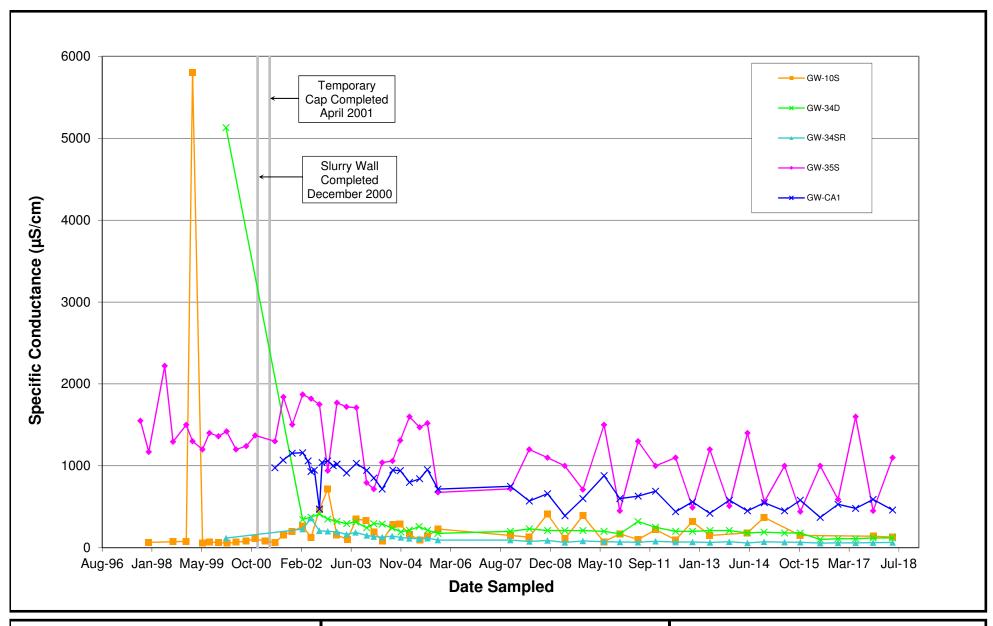
wood.

Specific Conductance in Groundwater Southeast of Containment Structure



wood.

Specific Conductance in Groundwater West of Containment Structure



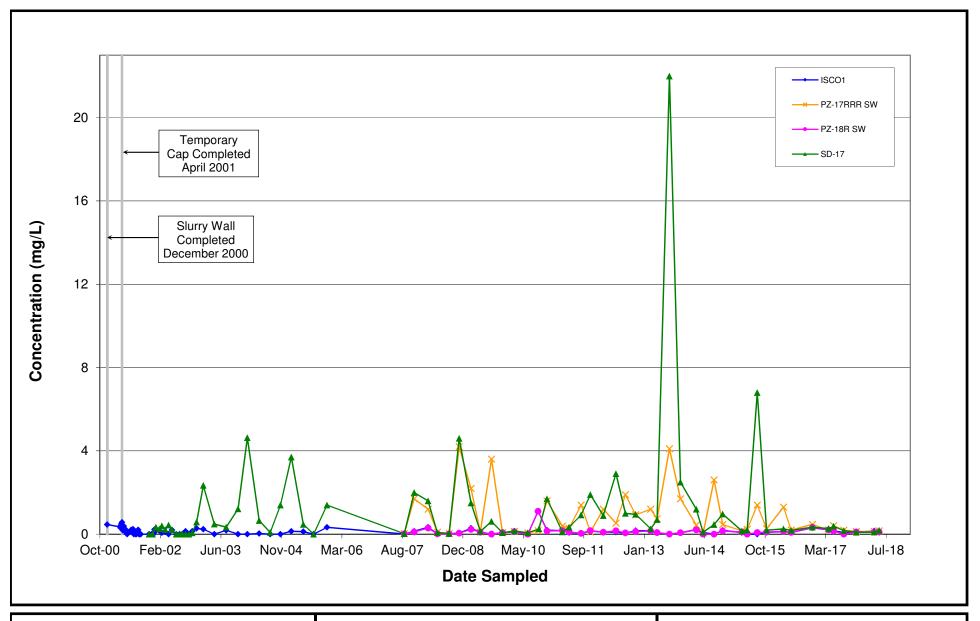
wood.

Specific Conductance in Groundwater North of Containment Structure

wood.

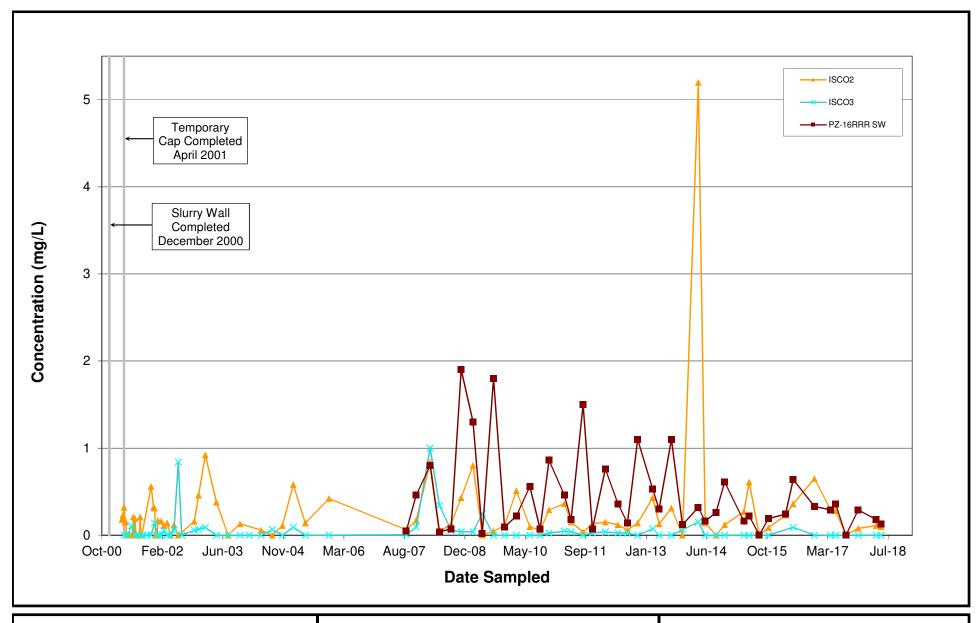
Appendix D2

Surface Water (Aluminum, Ammonia, Chloride, Chromium, Sulfate)



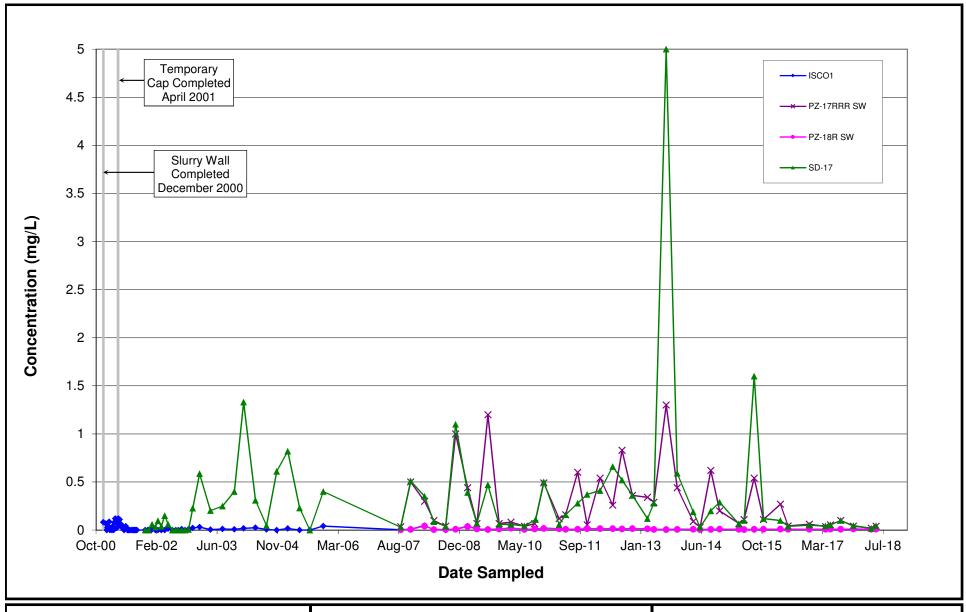
wood.

Filtered Aluminum in Surface Water in the Upper South Ditch



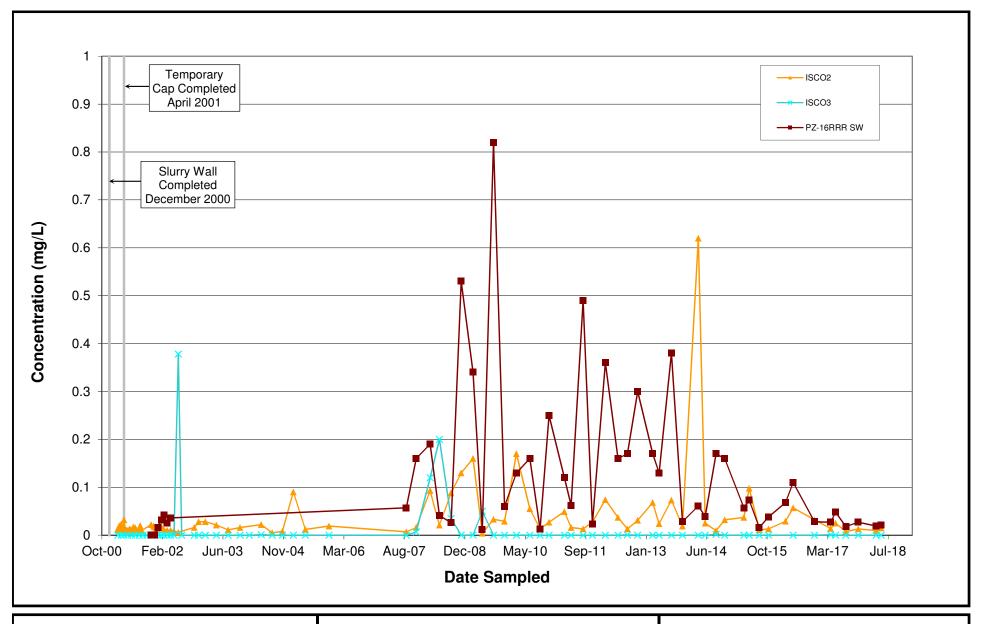


Filtered Aluminum in Surface Water in the Lower South Ditch



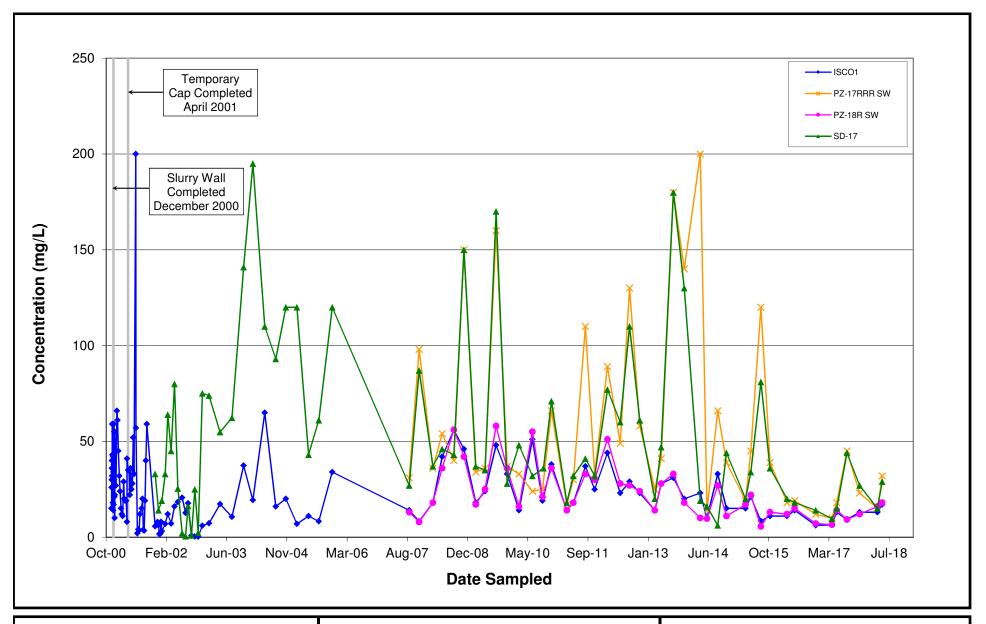
wood.

Filtered Chromium in Surface Water in the Upper South Ditch



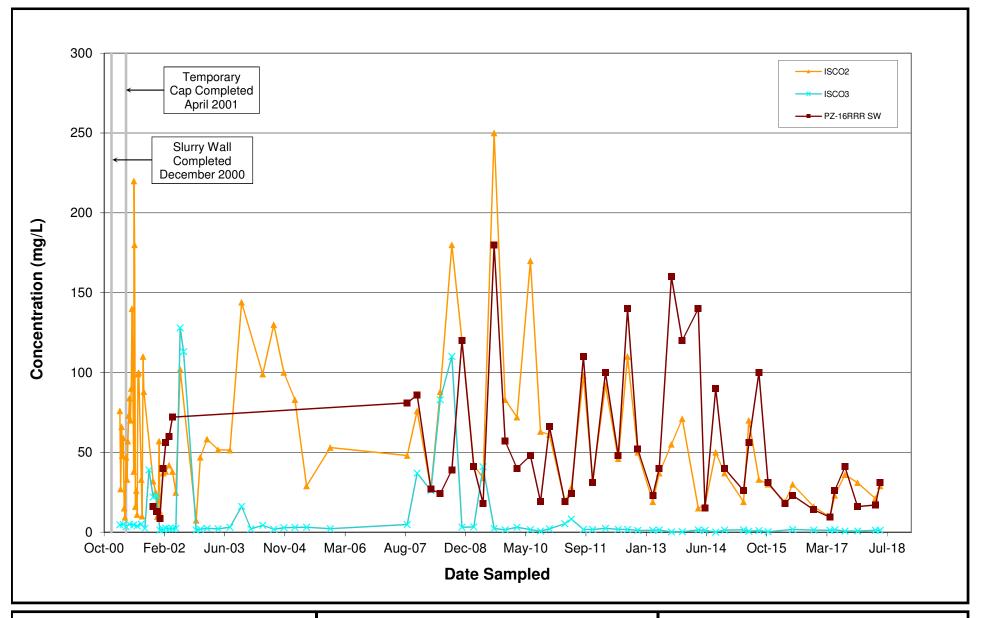


Filtered Chromium in Surface Water in the Lower South Ditch



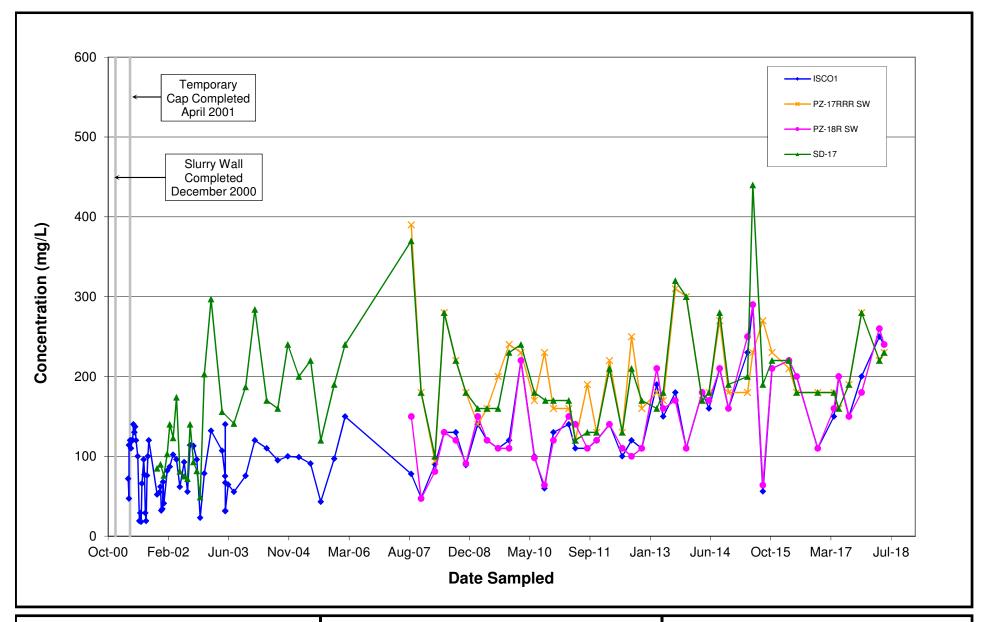
wood.

Ammonia in Surface Water in the Upper South Ditch



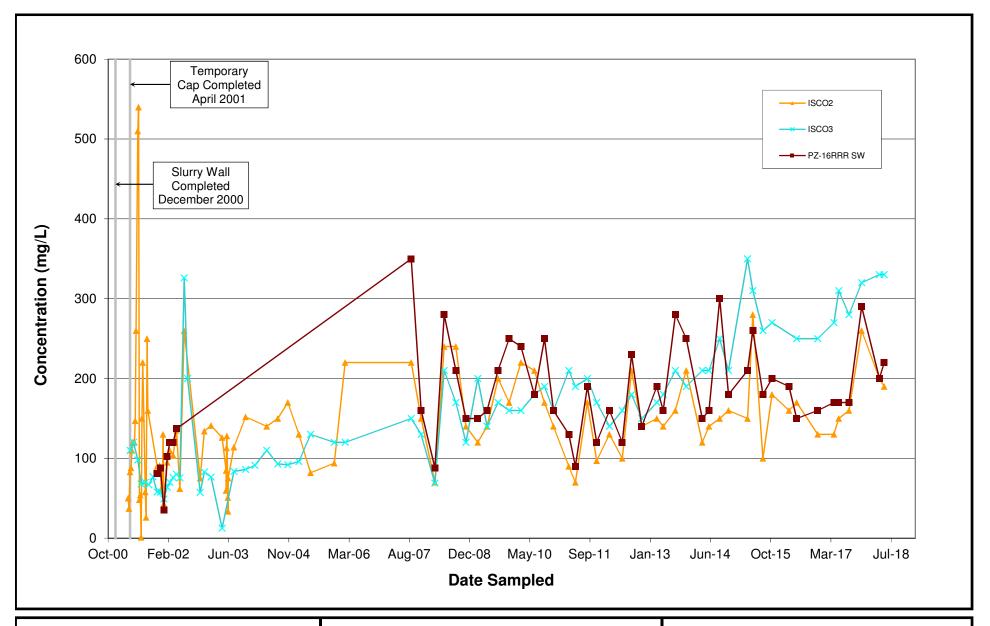


Ammonia in Surface Water in the Lower South Ditch



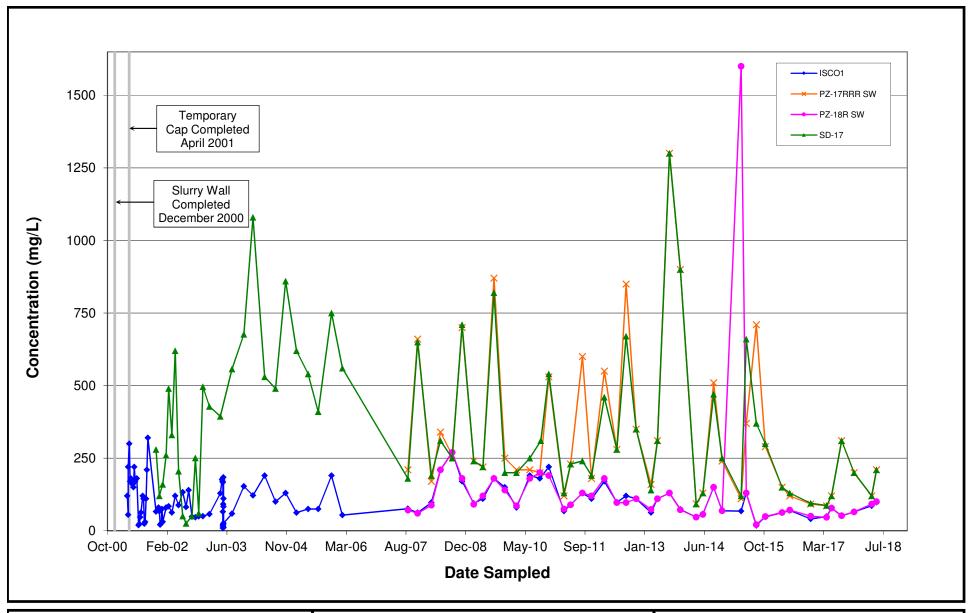
wood.

Chloride in Surface Water in the Upper South Ditch



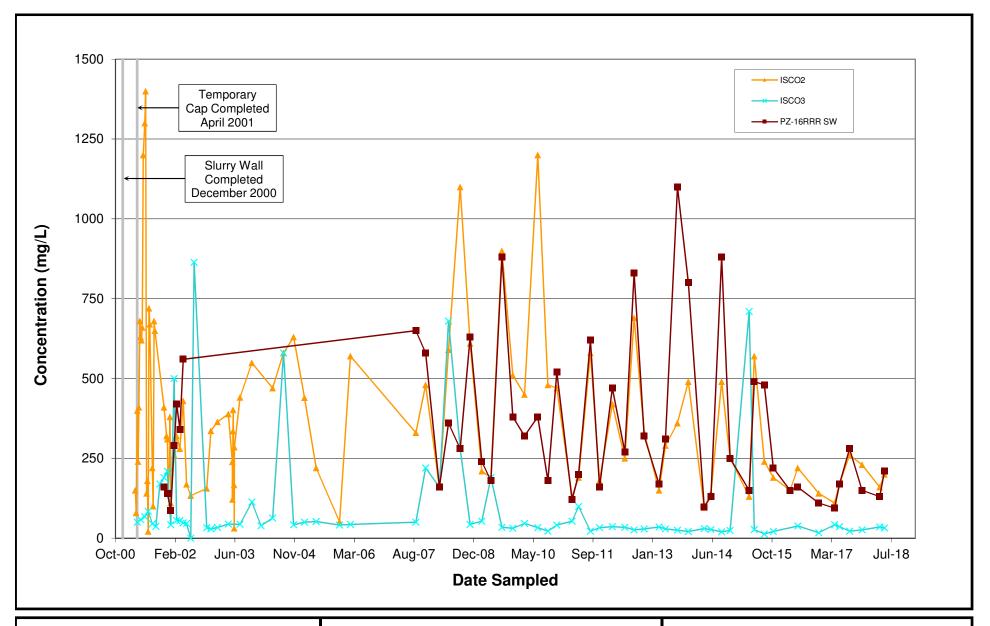


Chloride in Surface Water in the Lower South Ditch



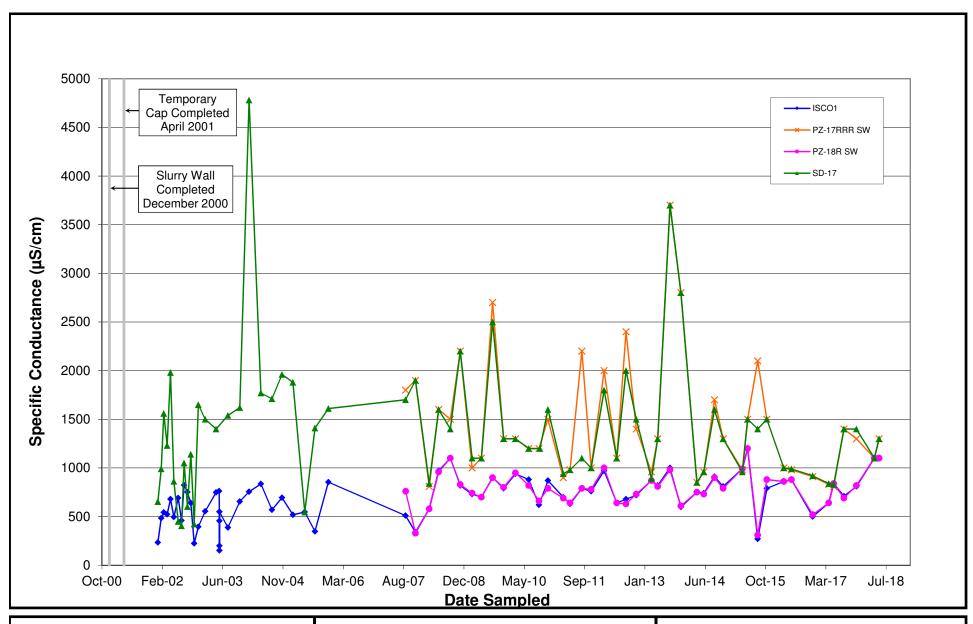
wood.

Sulfate in Surface Water in the Upper South Ditch



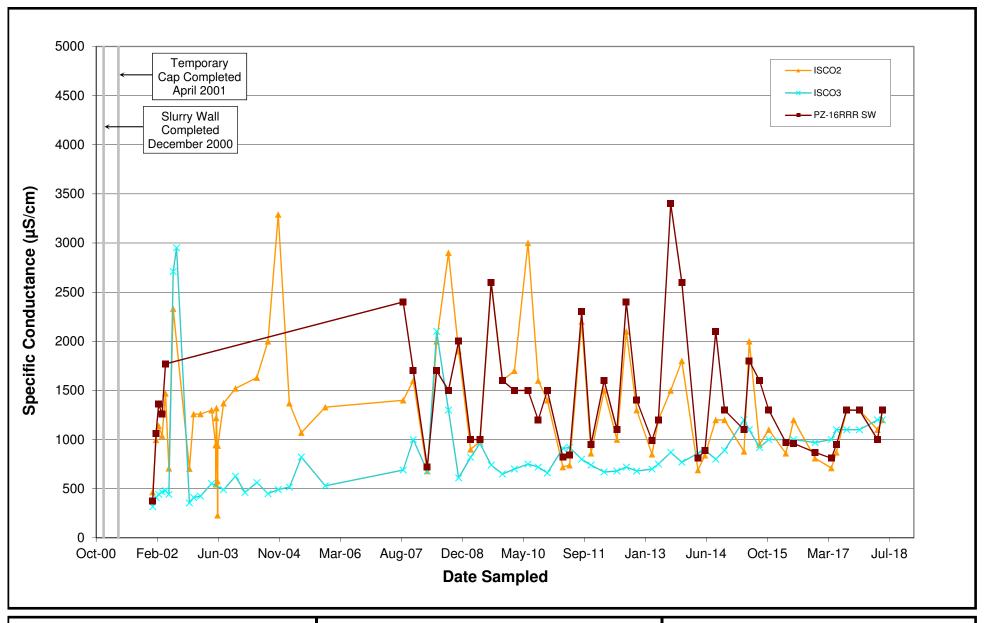


Sulfate in Surface Water in the Lower South Ditch



wood.

Specific Conductance in Surface Water in the Upper South Ditch



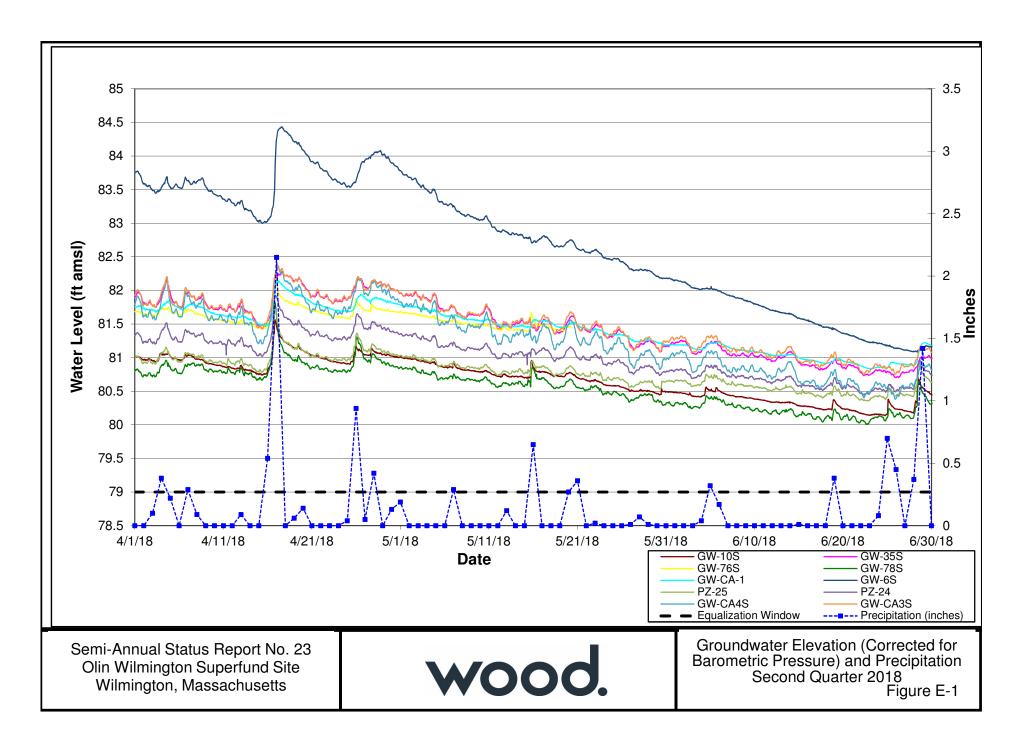
wood.

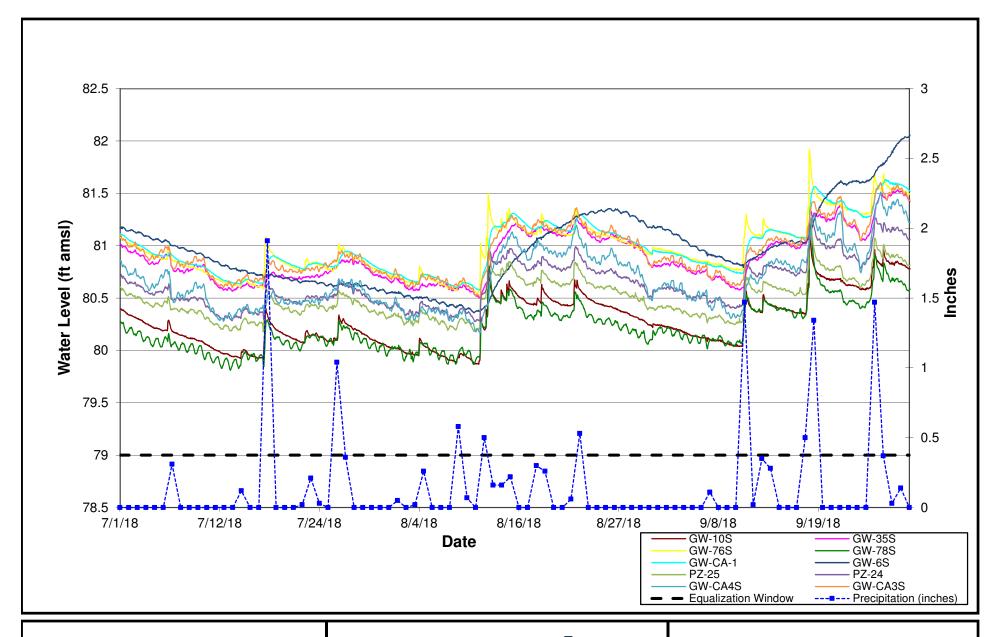
Specific Conductance in Surface Water in the Lower South Ditch

wood.

Appendix E

Slurry Wall/Cap Data Logger Water Level Plots





wood.

Groundwater Elevation (Corrected for Barometric Pressure) and Precipitation Third Quarter 2018

Figure E-2